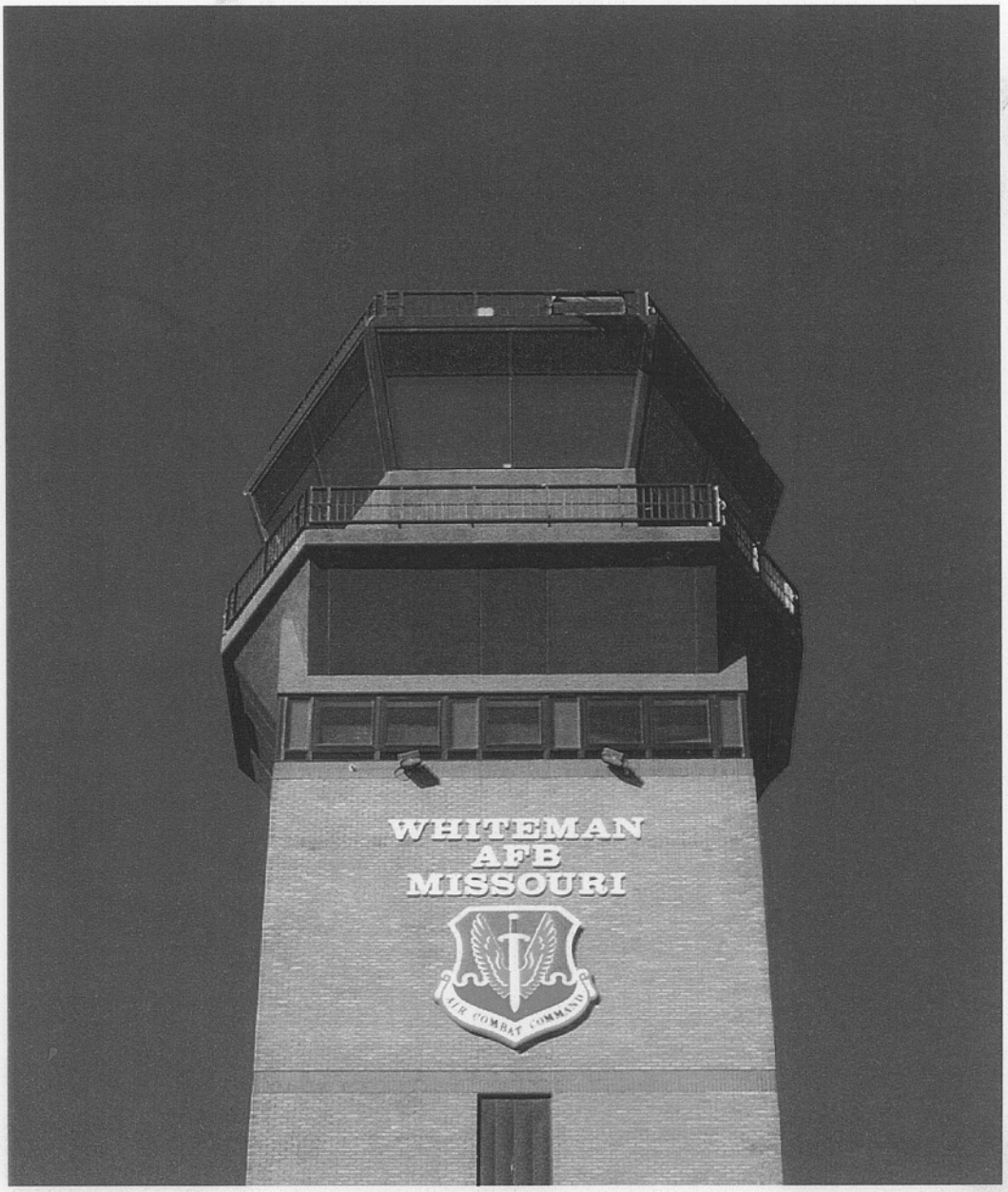
ATTACHMENT A

WHITEMAN AIR FORCE BASE

DESIGN COMPATIBILITY STANDARDS

DESIGN COMPATIBILITY STANDARDS

WHITEMAN AIR FORCE BASE MISSOURI



DESIGN COMPATIBILITY STANDARDS

WHITEMAN AIR FORCE BASE MISSOURI

DECEMBER 1999

Prepared by CMSS Architects, P.C.

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EXECUTIVE SUMMARY

Whiteman Air Force Base currently consists of five clearly distinguishable land use areas:

- Mixed Use Central Area
- Flight Line Area
- Facilities Engineering Industrial Area
- Residential Neighborhood Area
- Recreational Area

The base area plan presents a highly ordered and well organized environment for pursuing the base mission. Each of the areas is functionally distinct and, each has unique physical characteristics. It is the goal of these Design Compatibility Standards to enhance the unique character of each area while promoting policies reinforcing a harmonious base-wide visual appearance.

Hence, these Design Compatibility Standards have been formulated to:

- Promote conformance with the Air Combat Command (ACC) Architectural and Interior Design Standards.
- Further the development of a base-wide "corporate image" through the creation of a base-wide "campus atmosphere."
- Further the development of an architectural style for the base by establishing clear guidelines for achieving a coherent and appropriate visual imagery.

The development of a "corporate image" involves visual unification of the physical elements of the base. Implementing standard wall and roof materials, standardizing the ratio of windows and walls, specifying common colors, and selecting common accessories will lend visual coherence throughout a base. Similarly, the development of a "campus atmosphere" involves overall spatial unification, i.e. development of a clear, orderly arrangement of buildings with common relationships to the streets, to the base open space and to each other.

The architectural style of Whiteman Air Force Base consists of broad planes of masonry with regularly spaced rectangular openings presenting a forthright appearance of strength and security. The 509th Bomb Wing Headquarters Building, Whiteman Inn and the Fitness Center, all exemplify elements of the Base architectural style.

In pursuit of these overall objectives, this manual has been established to provide coordinated design criteria throughout the base. These criteria include:

- Future Land Use Plan, Ref: Facility Improvement Plan on File in Base Engineer's Office
- Site Design Standards
- Architectural Standards
- Interior Design Standards
- Landscape Architecture Standards, Ref: Landscape Development Plan on File in Base Engineer's Office
- Signage Standards
- Site Lighting Standards
- Engineering Standards.

All projects at Whiteman Air Force Base must be constructed in accordance with the Whiteman Design Compatibility Standards, the Americans with Disabilities Act, the Uniform Federal Accessibility Standards, the Uniform Building Code, NFPA 101 and the Force Protection Guidelines.

In addition, all projects must conform to the Whiteman Air Force Base Landscape Development Plan, Architectural Design Policy and Interior Design Policy.

Points of contact for these Base Standards are:

Mr. Bruce L. Smith:
Base Architect (660) 975-6296

Mr. Robert L. Steinkuehler, AICP:
Base Community Planner (660) 975-6306

Mr. Tony M. Meulmester, IIDA:
Base Interior Design (660) 687-6186

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I. Introduction

Whiteman Air Force Base, Missouri

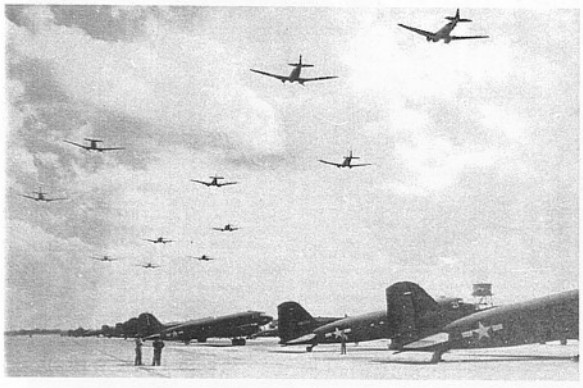
I. Introduction

A. Base Mission

1. History

Whiteman Air Force Base was founded on 6 August, 1942 as the Sedalia Glider Base. In November 1942 it was renamed the Sedalia Army Air Field, and assigned to the 12th Troop Carrier Command of the Army Air Force. The original mission involved the training of glider tactics and paratroopers, the field having been assigned Douglas C-46's and C-47's together with the Waco CG-4A glider. After the conclusion of World War II during the nationwide demobilization, the base was closed.

In August 1951, the Strategic Air Command activated the 4224th Air Base Squadron to oversee the renovation and reconstruction of a new Sedalia Air Force Base. Work continued until 20 October 1952 when the 4224th deactivated, turning the base over to the 340th Bombardment Wing who were scheduled to receive the new B-47 Stratojet and the KC-97 Tanker. After the completion of runway improvements and other projects in November 1953, the first B-47 arrived in March 1954.



On 3 December 1955 Sedalia Air Force Base was renamed Whiteman Air Force Base in honor of 2nd Lieutenant George A. Whiteman. Lieutenant Whiteman, a native of Sedalia was among the first American airmen killed in World War II during the Japanese attack on Pearl Harbor.

In June 1961, Whiteman Air Force Base was selected to host the fourth Minuteman Intercontinental Ballistic Missile Wing. The Strategic Air Command activated the 351st Strategic Missile Wing on 1 February 1963, and the 340th Bombardment Wing operations were gradually phased out over the next few months. Construction of the ICBM silo complex, including 168,000 yards of concrete, 25,355 tons of reinforcing steel and 15,120 tons of structural steel, was completed during June 1964.

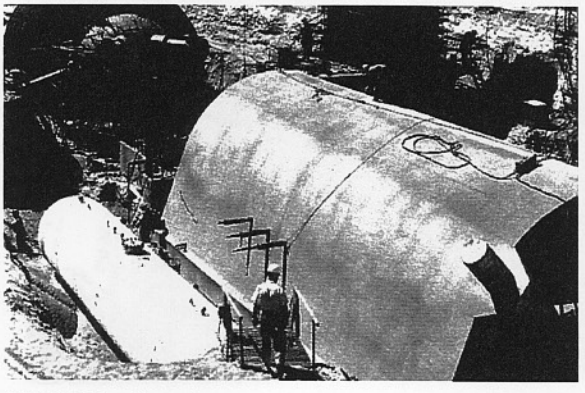
In the mid 1960's, a force modernization program converted the Minuteman I sites to the Minuteman II. Yet, aside from this and other on-going modernization programs, the base was relatively stable from the early 1960's to the mid 1980's.

I. Introduction

A. Base Mission

Then on 5 January 1987 Congressman Ike Skelton announced that the new B-2 Bombers would be assigned to Whiteman. Consequently, a massive new construction program began in 1988, creating facilities designed for B-2 operations, maintenance and support activities.

The 100th Air Division was activated at Whiteman on 1 July 1990 assuming host responsibilities for the base. Simultaneously, the 351st Combat Support Groups and the 351st Security Police Group were deactivated along with their assigned units to be replaced by equivalent squadrons bearing the 800th designator. Shortly afterwards, on 30 September 1990, the 509th Bomb Wing moved its headquarters to Whiteman, although in an unmanned and non-operational mode. Strategic Air Command deactivated the 100th Air Division on 26 July 1991 reverting host responsibilities of the base back to the 351st.



ICBM Silo Complex

Following the end of the Cold War, the Strategic Air Command itself was disestablished on 1 June 1992, together with the Tactical Air Command and Military Air Command. Subsequently, the organizational structure of the 509th was transferred to the newly activated Air Combat Command.

On 1 April 1993 the 509th Bomb Wing returned to operational status, one month later accepting host responsibilities for Whiteman from the 351st. Then, on 17 December 1993, the first operational B-2, the "Spirit of Missouri" arrived at the base. The 442nd Fighter Wing arrived on the base on 12 June 1994, having been transferred from Richards Gebauer Air Force Base. Finally, concluding a 30 year relationship with Whiteman Air Force Base and having completed the deactivation of the Minuteman II ICBM's, the 351st Missile Wing was officially deactivated on 31 July, 1995.

2. Base Components

Whiteman Air Force Base is host to the 509th Bomb Wing, the 442nd Fighter Wing and the Army Aviation Support Facility # 1. The 509th Bomb Wing flies the B-2 Stealth Bomber and the T-38 Talon Trainer. The 442nd Fighter Wing flies the A-10 Thunderbolt II fighter, and the Army Aviation Support Facility # 1 flies the AH-1 Cobra attack helicopter.

I. Introduction

A. Base Mission

3. Mission Statement

As the host wing at Whiteman, the mission of the 509th Bomb Wing is to:

- Develop and sustain the world's best stealth warfighting capability through innovative planning, training and exercising.
- Develop and maintain the highest level of readiness to support world wide contingency operations.
- Create and foster a 509th BW quality culture through leadership and teamwork.
- Make safety an integral part of everything we do, in the air, on the ground, on or off duty.
- Provide resources, time and opportunity to promote wellness and continually improve how and where we work, live and play.
- Improve the environment through comprehensive education and aggressive compliance.

B-2 Bomber

B. *Regional Setting*

1. Geographic Setting

Whiteman Air Force Base is situated in the heart of the Great Plains, nestled amidst the wooded, rolling hills of West Central Missouri. Whiteman Air Force Base is located 60 miles southeast of Kansas City, Missouri and is easily accessible via Interstate 70 and US Highway 50.

2. Climatic Setting

The climate at Whiteman Air Force Base is typical of the Central Plains. At an altitude of 900', the climate is temperate with an average annual rainfall of 41", and an average annual snowfall of 22".

3. Geological Setting

The natural, regional landscape character is undulating prairie. While open prairie extends to the northwest, the region is bounded on the south by the northern-most foothills of the Ozark Mountains and to the east by the edge of the South-eastern U.S. deciduous forests. The resulting landscape is a unique mix of forest, mountains and prairie, a landscape of occasionally dense forests of Oak, Maple, Hickory and Redbud, of tree lined creeks eroding rocky hills, and of park-like prairie open spaces dotted with trees.

4. Soils

Soils on the base generally consist of expansive clays. Soil borings are required for all subsurface design.

Whiteman AFB Climatic Information

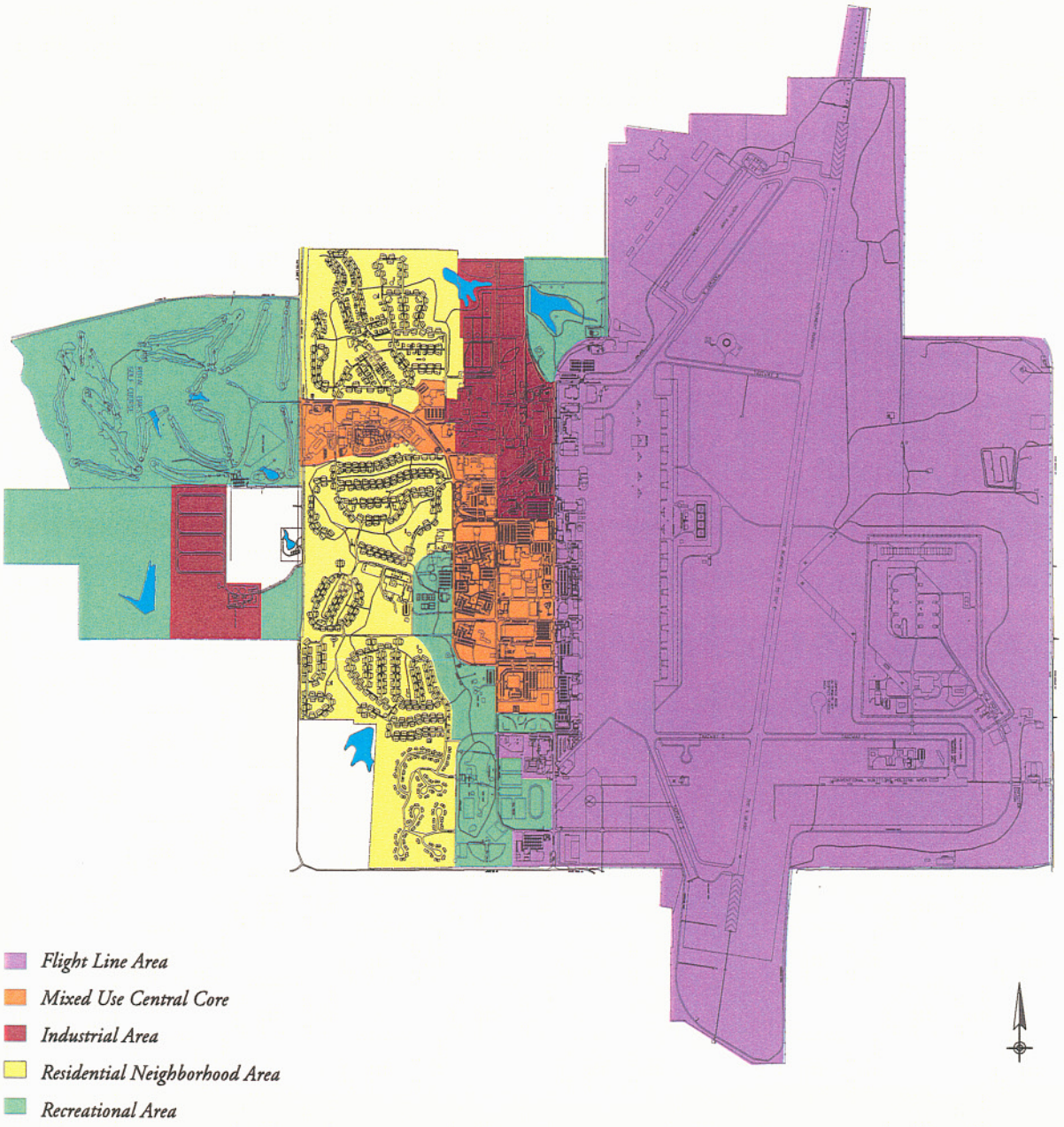
Weather Parameters	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Avg. Maximum Temp	37	43	54	66	74	83	89	87	79	68	53	41
Avg. Daily Temp	29	34	44	56	65	74	79	77	69	58	44	33
Avg. Minimum Temp	20	25	34	45	55	64	68	66	58	47	35	25
Maximum Precipitation	5.15	4.59	8.90	10.12	11.50	15.58	17.09	11.70	19.42	7.98	11.73	6.57
Avg. Precipitation	1.45	1.63	2.95	4.13	4.85	4.78	4.31	4.04	4.34	3.47	2.63	2.08
Minimum Precipitation	0.05	0.14	0.66	0.68	1.04	0.41	0.24	0.30	0.32	0.19	< 0.5	0.25
Maximum Snowfall	29.7	22.2	22.9	5.8	0.0	0.0	0.0	0.0	0.0	< 0.5	15.0	17.1
Avg. Snowfall	6.3	5.9	3.1	0.6	0.0	0.0	0.0	0.0	0.0	< 0.5	1.3	4.5
Prevailing Wind Dir.	180	330	180	180	180	180	180	180	180	18	18	18
Avg. Wind Speed	8	8	9	8	6	6	6	5	6	7	8	7
Maximum Wind Speed	48	69	65	60	51	67	60	56	47	58	66	52
Days w/ Thunderstorms	1	1	3	7	9	10	9	8	6	4	2	1

Source: Compiled from Sep 86 – Aug 96 Surface Observations and Dec 42 – Sep 46 and Jun 54 – Aug 96 Daily Summaries

II. Base Overview and Land Use Area Analysis

II. Base Overview and Land Use Area Analysis

A. General Overview



II. Base Overview and Land Use Area Analysis

A. General Overview

Whiteman Air Force Base consists of five clearly distinguishable land use areas:

- Mixed Use Central Area
- Flight Line Area
- Industrial Area
- Residential Neighborhood Area
- Recreational Area

The clear delineation of each of the areas and their precise functional adjacency presents a well organized environment for pursuing the base mission. Contributing to this organizational clarity, each of the areas are functionally distinct and, therefore, each area has unique physical characteristics. Refer to the future land use plan in the Facilities Improvement Plan for detailed area delineations.

These Design Compatibility Standards seek to unify the design of Whiteman Air Force Base by fostering the creation of a "corporate image" for the base through the development of a "campus atmosphere" on the base.

While a military base certainly possesses unique functional requirements (high security, munitions and fuels storage, mission training, etc.) and spatial areas (e.g. runways and hangars, weapons storage, rifle ranges), the majority of the base physical plant corresponds roughly with current developments of corporate office parks, college and university campuses, and small American towns.

The development of a "corporate image" involves visual unification of the physical elements of the base. Implementing standard wall and roof materials, standardizing the ratio of windows and walls, specifying common colors, and selecting common accessories will lend visual coherence throughout a base. Similarly, the development of a "campus atmosphere" involves overall spatial unification, i.e. development of a clear, orderly arrangement of buildings with common relationships to the streets, to the base open space and to each other.

The plan for achieving this "campus atmosphere" is by implementing simple, clear principles of planning, architecture, and landscape architecture throughout the base. These planning principles will include the development of guidelines for integrating buildings and open space.

The guidelines coordinate the regulation of street hierarchy, building massing and heights, and functional zoning and subzoning for the creation of unified areas. The criteria also includes setback requirements for the reinforcement of street edges, direct relationships between buildings, entrances, and street frontage, and guidance regarding appropriate adjacencies at area edges.

II. Base Overview and Land Use Area Analysis

A. General Overview

With respect to the overall landscape, the importance of street trees for the creation of a unified environment cannot be overstated. The planting of street trees throughout the individual areas can successfully integrate them into a coherent whole. These various areas of the base (Mixed Use Central Area, Flight Zone, Industrial Area, Residential Neighborhood Area), together with the open prairie (Recreational Area) which simultaneously unites and divides them, form a basewide system of open space development, providing a continuous, yet varied, network of vehicular and pedestrian pathways.

Architecturally, the Standards specify a limited, but not overly restrictive, palette of exterior materials. In addition, common area policies towards sloped roofs and common fenestration types and patterns further reinforce the "base atmosphere." This assists in the creation of a unified image for the base, an architectural style primarily consisting of broad planes of masonry with regularly spaced rectangular openings presenting a solid, stoic image of strength and security.

The Landscape Architectural Standards at Whiteman focus on providing landscaping appropriate for the regional environment. The guidelines incorporate indigenous plant material, xeriscaping principals and designs intended to reduce maintenance and water usage. These policies assist in the creation of a regionally appropriate landscape.

II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

The following pages provide a location map and description of each of the following Whiteman Air Force Base land use areas:

1. Mixed Use Central Area
2. Flight Line Area
3. Industrial Area
4. Residential Neighborhood Area
5. Recreational Area

II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

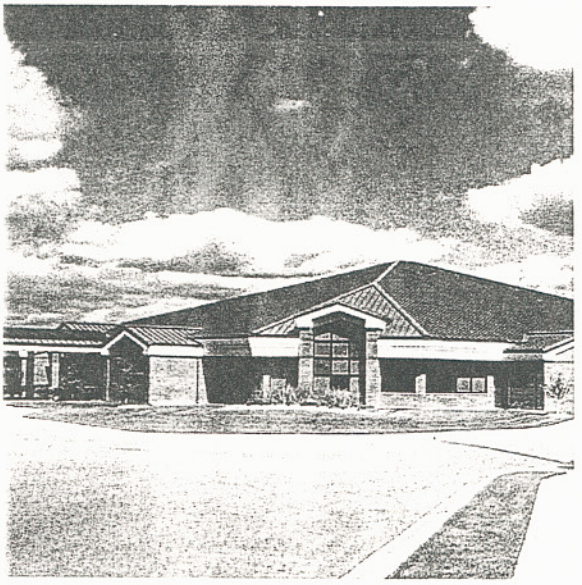
II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

1. Mixed Use Central Area

The buildings in the Mixed Use Central Area, though functionally diverse, are remarkably consistent visually. The clarity and consistency of the layout result directly from the adoption of, and strict adherence to, the existing Base Master Plan, Architectural, and Landscape Standards. This area of the base contains a vast array of functional building types, including retail buildings, dormitories, office and command buildings, chapels and a collocated club. Exterior wall surfaces are consistently of brick, though colors vary. Older buildings are of a light buff color while newer buildings are of a darker color. A few facilities are faced with metal panels and some have been renovated with exterior insulating finish systems. Roofing materials range from asphalt shingles to standing seam metal on sloped surfaces. Flat roofs are of an EPDM type. Fenestration throughout the area is climatically appropriate, with most buildings having "punched out" windows of fairly modest size and scale.

Recently completed buildings serve as a model for Whiteman's future. The buildings front the streets well and the main entries are sensitively sited with respect to the existing street network. The materials, colors and fenestration found throughout the area present a clear, forthright appearance of strength and security.



The dormitory buildings in the area are sited in accordance with the principles of campus planning, providing recreational and pedestrian orientated spaces towards the interior of the block. While the planning is appropriate for the function, care should be taken to ensure that the parking areas are adequately screened from the streets. Whether achieved through garden walls or planting materials, this screening can simultaneously reduce the visual presence of the parking and reinforce the continuity of the street system.

II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

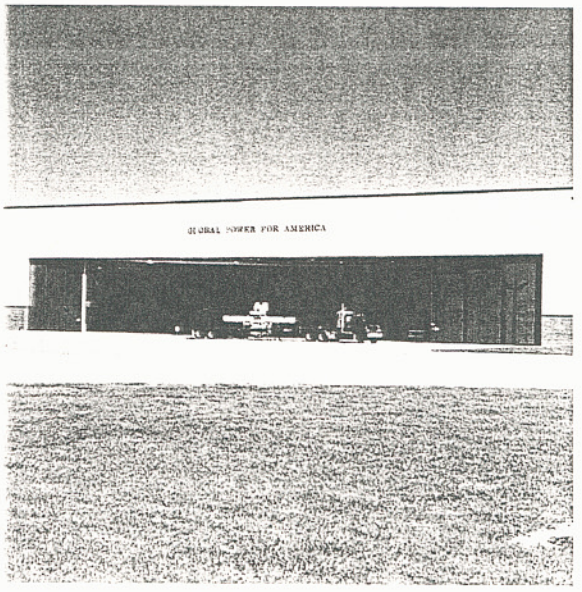
II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

2. Flight Line Area

The Flight Line Area consists of two parallel linear arrays of buildings along the western edge of the base. The first range has Arnold Avenue as its eastern boundary. Arnold Avenue runs parallel to the flight line, and serves as the main street for the flight line, providing both pedestrian and vehicular access to all the buildings. These buildings consist mainly of hangar type structures fronting the aircraft parking apron. Smaller support facilities, located between the hangars and Arnold Avenue, are used for maintenance, fire training, and supplies storage. The second range of buildings, hangers specifically developed for the B-2 Bombers, are located directly across the parking and maneuvering apron. The Flight Line Area is primarily industrial in character, with the majority of buildings consisting of large metal panel structures with sloping metal roofs atop a wainscot of brick masonry. These buildings form a clear and coherent visual presence for the primary mission of the base.

Landscaping in the Flight Line Area primarily exists at the Base Operations Center and the Control Tower. Turf areas have been somewhat reduced in size through the use of plant material and groundcover and continuation of this practice is encouraged. Minimal landscaping occurs along the rear of the flight line between the structures and Arnold Avenue and mindful of stringent security restrictions, this should be enhanced.



In general, the Flight Line Area has a well developed presence visually as well as organizationally. A central mixed use functional sub-zone of the Flight Line Area lies between 6th Street and 8th Street. To the north and south of this central area are the hangars. While the clarity of this internal organization is very positive and a direct result of the adoption and enforcement of the Base Master Plan, Architectural and Landscape Standards, the area needs to reinforce its organizational and visual relationship with the adjacent mixed use central area. Support buildings, garden walls, and landscaping should be added to provide a visual screen from Arnold Avenue as well as to provide spatial definition along Arnold Avenue.

II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

B. Whiteman Air Force Base Areas

3. Industrial Area

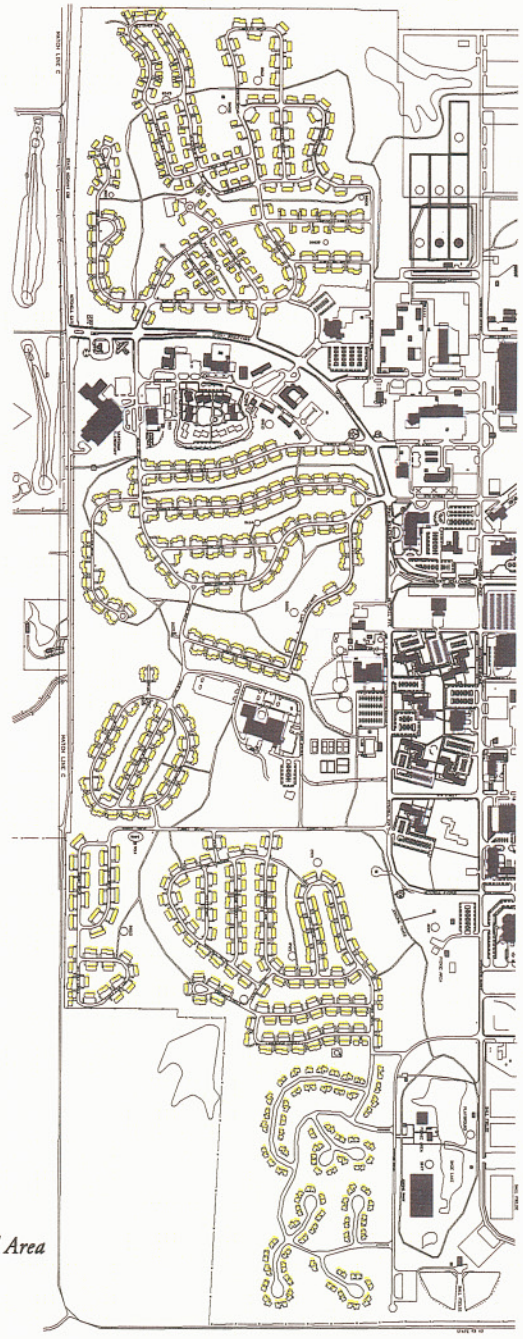
The Industrial Area of the base consists mostly of one story structures serving as support for the entire base. The facilities are primarily offices, maintenance and storage structures which are simple and utilitarian. The principal materials on office facilities include brick or exterior insulated finishing system materials. The maintenance and storage facilities are typically metal panel buildings. Roofs are either low-sloped or flat. Door and window openings have a "punched out" vocabulary.

The area has a limited number of buildings and several open lots, most of which are planted with native grasses. Areas around office buildings have turf with few other landscaping elements.

In general, the area needs to reinforce the existing street network by fronting the streets with garden walls or landscaping materials, simultaneously using them to screen existing parking areas behind. Landscaping and garden walls may also be utilized to screen service areas. Coordinating the masonry of the walls with the buildings will all contribute to the existing visual harmony of the Area.

II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

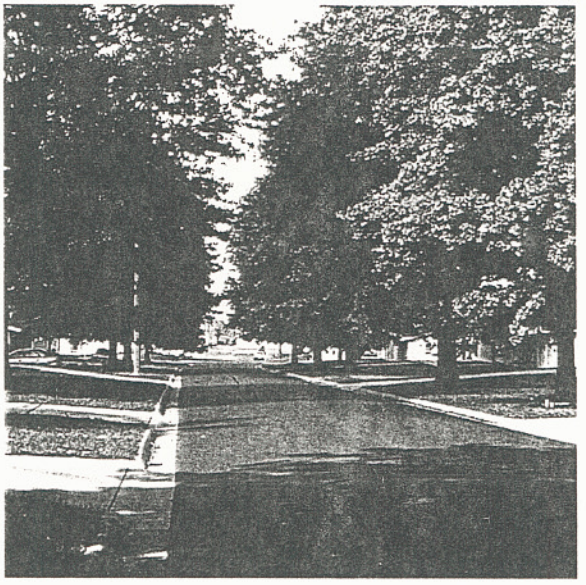


Buildings in Residential Neighborhood Area

Buildings in Adjacent Areas

B. Whiteman Air Force Base Areas

4. Residential Neighborhood Area



The Residential Neighborhood Area at Whiteman consists of a clear and coherent arrangement of housing units. The houses are typically one story structures with sloping roofs, usually of fiberglass shingles. Exterior wall materials vary from metal siding to brick, different neighborhoods being distinguished through different materials.

The older residential neighborhoods typically have large trees, which provide shade and enhance the overall appearance of the neighborhoods. Areas of turf (bluegrass typically), requiring high intensity water usage, should be restricted to the rear yards. Front yards should be converted to more native, regional plant materials (see Whiteman Air Force Base Landscape Development Plan).

In general, the planning of these neighborhoods and their architectural character constitutes a successful program of integrating buildings into coherent unified communities. They also illustrate successful planning for the gradual expansion and growth of neighborhoods over time. The development of separate residential neighborhoods, instead of a monotonous street grid of repetitive housing units, establishes a scale and individuality appropriate to residential usage.

II. Base Overview and Land Use Area Analysis

B. Whiteman Air Force Base Areas

5. Recreational Area

The Recreational Area at Whiteman weaves throughout the base, providing an enormous resource for passive recreational activities on an open expanse of prairie grasses, streams, and lakes. With formalized active recreation areas, such as softball, baseball, soccer and football fields located within this area, the Area has tremendous opportunity for development as a pedestrian-oriented, social, recreational and family activity area.

The Recreational Area is a large and inviting area consisting of plant material which is primarily natural. The lake edges have plant groupings and materials which have propagated naturally. Beyond the waters' edges are large turf areas which allow for passive and informal active recreation. Located throughout the area are open air shelters, simple pitched roof structures supported on columns. The columns are either wood or brick and the roofs are typically of asphalt shingles. The area links both active and passive recreational opportunities together with the Residential Neighborhood Area in a coordinated basewide system of open space.

III. Design Standards

III. Design Standards

A. Site Design Standards

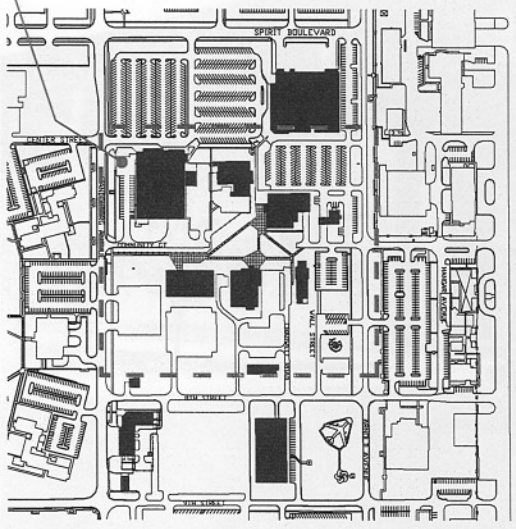
1. Use Groups/Adjacencies

For detailed information pertaining to this section, refer to the Whiteman Air Force Base Facility Improvement Plan Future Land Use Section.

Due to the variety, mix, and growth of building types on the base, projects should be reviewed on an individual basis. In general, new buildings should be located in accordance with the future land use plan. This will continue to reinforce the unique character of each of the different areas. Simultaneously, this will reinforce the developing sub areas in the *Mixed Use Central Area.*

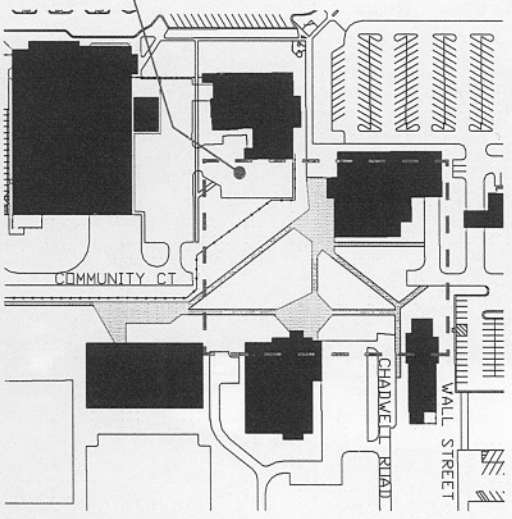
In the *Mixed Use Central Area*, the "downtown" of Whiteman Air Force base is bounded by Vandenberg Avenue to the west, 9th Street to the south, Spirit Boulevard to the north and Arnold Avenue to the east. This subzone, or "area within the area," contains facilities of central social importance to the entire base, e.g. the commissary, library, theater, Base Exchange, etc. Within this downtown area, the current parking area encompassed by the Base Exchange, Library, Theater and Commissary has the potential for development as the town center, or "market square" of Whiteman Air Force Base. Future retail and civic/institutional buildings should be sited in this area to reinforce the emerging "town square" atmosphere.

Area of Enlargement



The "Downtown" of Whiteman

Proposed Community Court



Enlargement: The emerging town center/market square of Whiteman

A. Site Design Standards

Existing bachelor enlisted quarters are integrated throughout the *Mixed Use Central Area*, typically clustered as a pair or quadrangle of units. Future housing should seek to reinforce and expand the existing clusters rather than infilling the existing blocks.

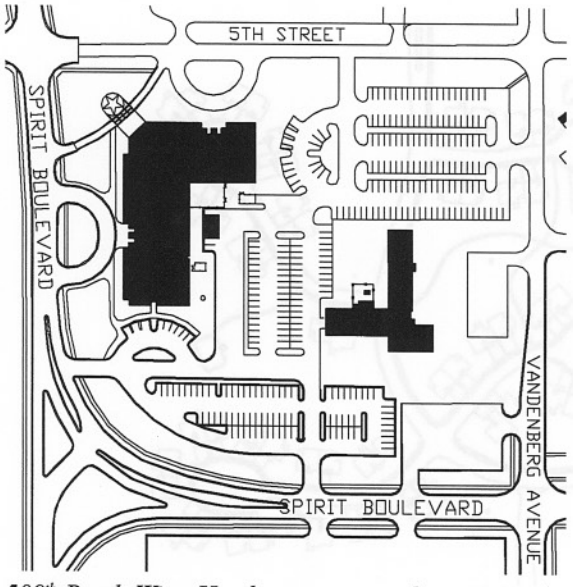
Future ancillary facilities which are directly supportive of the base flying mission along the *Flight Line Area* should be situated along Arnold Avenue. This will serve to link new facilities both to the existing squadron buildings and to the *Flight Line Area.*

In the *Recreational Area*, continue to congregate recreational structures (band-stands, gazebos, picnic shelters) together to generate coordinated areas of activity within the larger overall area.

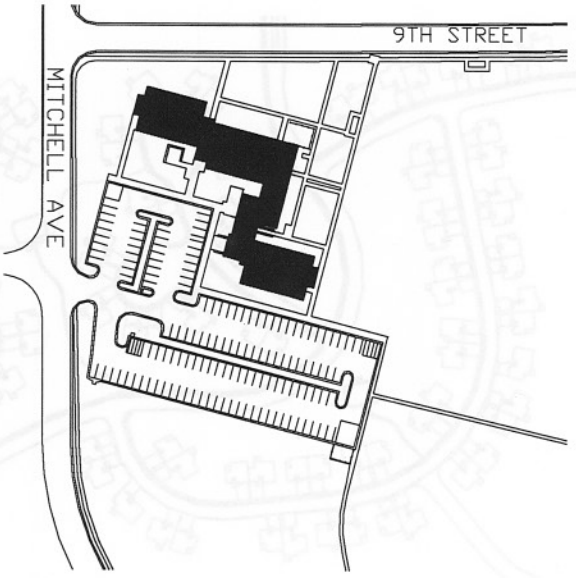
Regarding the *Residential Neighborhood Area*, continue to develop single family residential areas of limited extent around neighborhood oriented facilities and playgrounds.

2. Bulk: Massing and Heights

Projects should be reviewed on an individual basis. In general, throughout the base, buildings are restricted to two stories in height, except unaccompanied housing facilities, which are permitted to be three stories.



509th Bomb Wing Headquarters site plan in Mixed Use Central Area



Typical dormitory buildings site plan

III. Design Standards

A. Site Design Standards

Heights of buildings may vary as functionally required, but height should not vary more than one story from adjacent buildings. Hangar facilities along the *Flight Line Area* should be sized according to functional requirements.

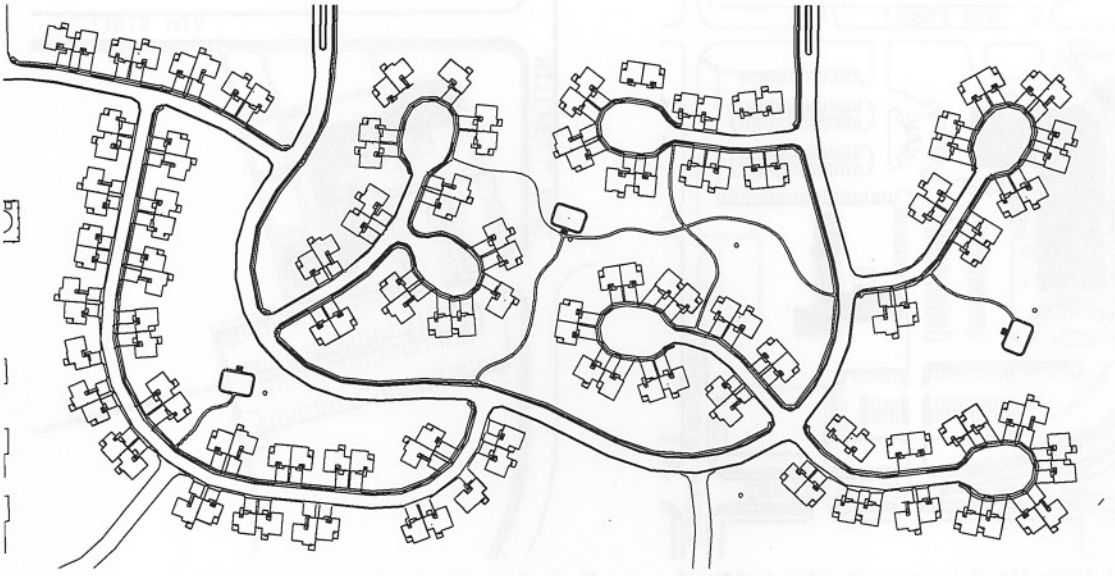
In the *Mixed Use Central Area*, as pressure mounts for additional development, concentrate taller buildings in the "downtown" area, described above.

In the *Flight Line Area,* along the length of Arnold Avenue, locate future flying mission support facilities. These lower height buildings will simultaneously articulate entrance ways, screen parking areas, and enhance the frontal presence of the *Flight Line Area.*

In the *Industrial Area,* maintain the one-story industrial character of this area.

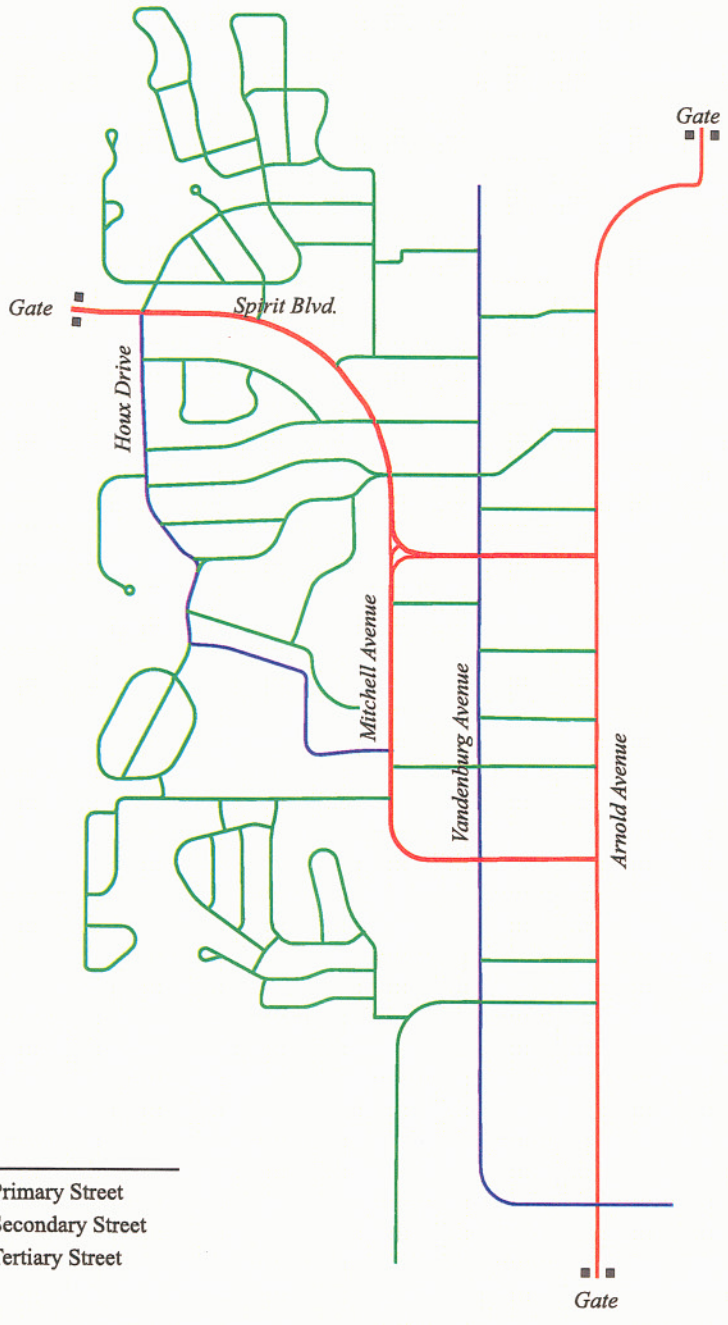
In the *Residential Neighborhood Area*, future development should incorporate two-story residential units as a means of economizing on land use, foundation and roofing costs, and HVAC usage.

In all *Land Use Areas,* where massive, large floor plate buildings are sited adjacent to smaller facilities, the larger building should be "broken down" visually to integrate with the adjacent structures. Building entrances, canopies, loggias, and the articulation of exterior wall components can all serve to integrate larger buildings into the streetscape.



Typical residential street layout

A. Site Design Standards



Street System

III. Design Standards

A. Site Design Standards

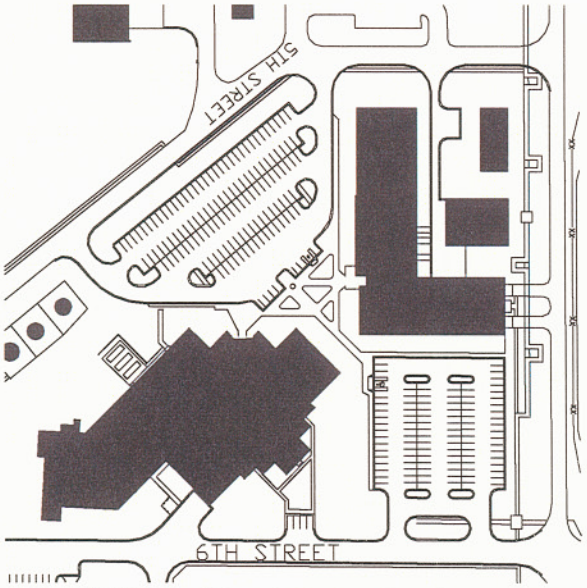
3. Open Space: Street Walls, Yards and Setbacks; Streets & Sidewalks

Given the diverse character of the base, providing regularity of the streetscape elements offers tremendous opportunity for creating a more cohesive environment. This includes controlling the relationship of sidewalks to curb, coordinating street plantings in relation to the curb, and regulating the types of street tree plantings. These guidelines reinforce the existing street hierarchy of the base, creating a more "legible," user friendly environment. See the Whiteman Air Force Base Landscape Development Plan for street tree planting schedule and plant types.

a. Street Walls, Yards & Setbacks

In all areas, to promote the development of street walls, buildings which are set diagonally to the street frontage should incorporate garden wall/ landscape plantings to infill the angled relationship to the street frontage.

In all areas, setbacks are to be a minimum of 25' for front and rear yards, 10' for side yards. Front yard setbacks may vary to accommodate varying conditions of existing buildings. In general, new facilities should seek to complement adjacent existing facilities.



MT and FTU Site Plan: Integrated parking and building plans

Aerial photo of MT and FTU Site Plan

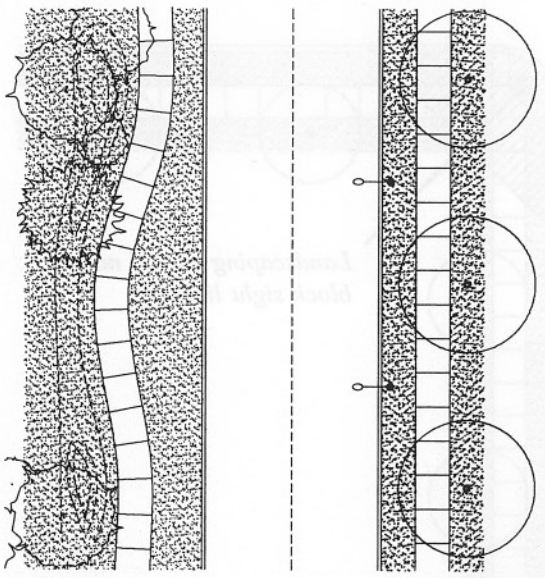
A. Site Design Standards

On corner lots, both streets are to be considered front yards, and both sides abutting other lots are to be considered side yards. Setbacks for screen walls shall be the same as for the buildings.

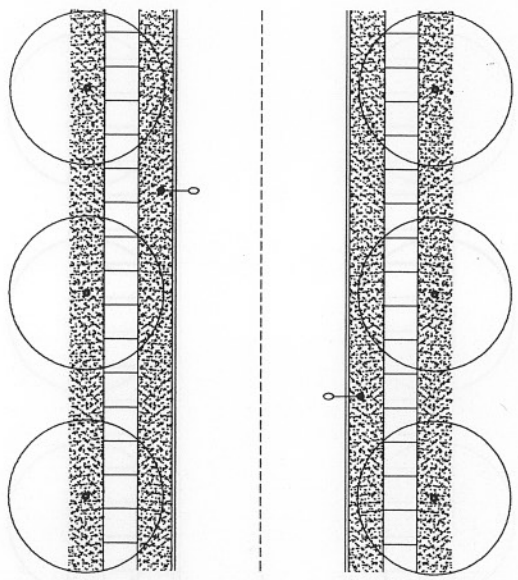
b. Streets and Sidewalks

To enhance and unify the overall character of the base, while simultaneously clarifying the uniqueness of each area, trees should be provided along the streets and at intersections in accordance with the following schedule:

- Streets which serve as major base wide thoroughfares (Primary streets, serving vehicular traffic almost exclusively and connecting to base entry gates: Spirit Boulevard, Mitchell Avenue and Arnold Avenue) will receive street trees.
- Streets which link the various areas of the base (Secondary streets which serve as a mix of vehicular and pedestrian traffic: Vandenberg Avenue, together with portions of Houx Drive and Sijan Avenue) will have street trees.



Sidewalk and street tree plantings at Recreational Area



Sidewalk and street tree plantings at Residential neighborhood

III. Design Standards

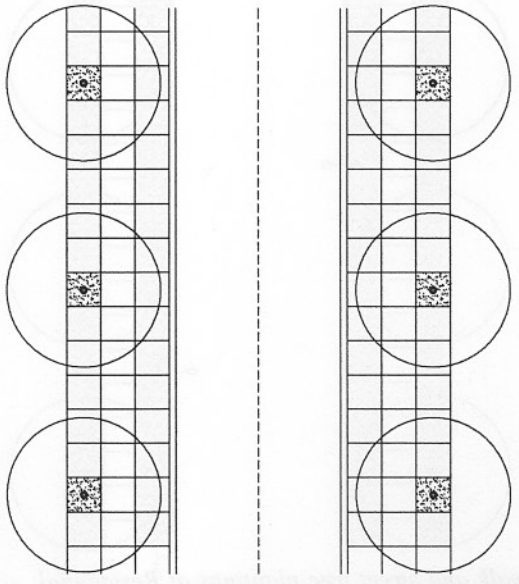
A. Site Design Standards

- Streets which are internal streets inside of areas (tertiary streets serving both vehicular and pedestrian traffic) will receive street tree plantings. The street tree plantings along internal area streets will reinforce the individual character of each area and create and enhance pedestrian activity.

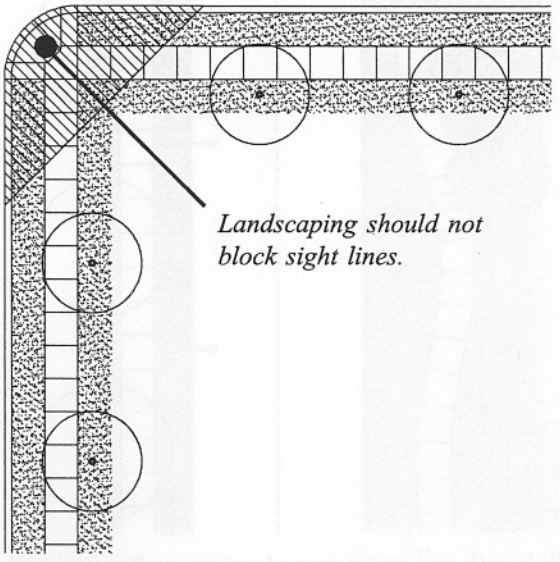
  In general, implementation of the street tree planting schedule will help create the appearance of a "Savannah", an open, natural prairie landscape containing distinct nucleated settlements of tree lined streets.

  Wherever provisions specify a regular rhythm of street tree plantings, they should be supplemented with irregular plantings behind the sidewalk edges. This dual system will ensure an overall harmony and diversity to the base while simultaneously encouraging each area to develop its own identity and individual character. For detailed information on street tree plantings and supplemental landscaping, see the Landscape Development Plan.

  All walkways should be handicapped accessible. Requirements of the Americans with Disabilities Act and the Uniform Federal Accessibility



Sidewalk and street tree planting treatment at Town Center/Market Square Area



Sidewalk and street tree plantings at typical intersection

A. Site Design Standards

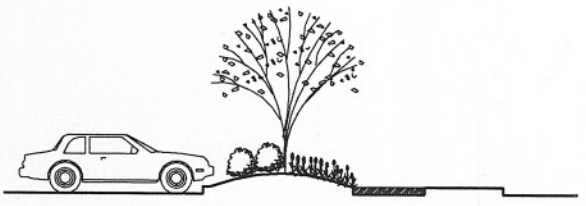
Standards must be met when designing walkways, ramps, and other pedestrian access facilities. Where site or development conditions make full handicap access unfeasible, an alternative handicapped route shall be provided with signage. Handicapped accessible walkways shall be designed to the following standards:

(1) It is preferred that walkways not exceed continuous grades 3%. Walkways with sustained grades in excess of 5% are considered ramps and shall have level areas a minimum of 5' in length every 30'.
(2) Where possible, walkways should have a continuous common surface, not interrupted by steps or abrupt changes in level exceeding ½". The walk surface shall be relatively smooth and have a non-slip surface such as a medium broom finish. These standards apply wherever walkways cross other walkways, driveways or parking lots.
(3) Surface cross slopes shall not exceed ¼" per foot (2%).

4. Parking

Parking should be located in multiple lots to the side and rear of the building it serves.

Well screened parking area



Desirable screened parking example.

III. Design Standards

A. Site Design Standards

Parking in the *Residential Neighborhood Area* should be directly off the street, following current practice. Garages should be not be flush with the front plane of the housing unit, unless otherwise dictated by functional necessity.

In the *Recreational Area*, parking should be located towards the periphery of the recreational area. Multiple lots accommodating fewer vehicles are preferred to a single, large parking lot.

Islands should be provided in parking areas to define areas of movement and to visually reduce the size of parking lots.

For details, see the Whiteman Air Force Base Landscape Development Plan.

B. *Architectural Design Standards*

1. Exterior Walls

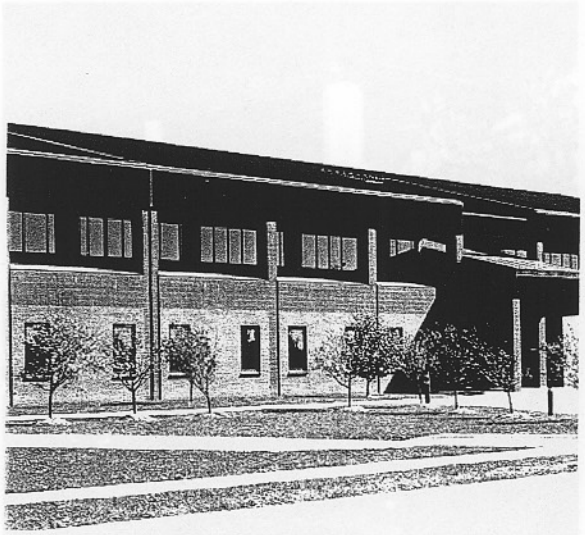
a. General Recommendations

For detailed information pertaining to this section, refer to the Whiteman Air Force Base Architectural Design Policy.

Exterior walls should be built of brick masonry. Buildings are limited to one primary type of masonry and shall include an accent feature of soldier courses to provide a sense of scale to the buildings.

Patterning of the brick masonry walls, such as the insertion of stack bond courses, is also acceptable for achieving a sense of scale. Patterning of the brick masonry can also be used successfully to articulate building entrances. All brick masonry units and mortar should be manufactured with additives to discourage efflorescence. Exterior walls of buildings with HVAC systems shall be insulated to at least R-19. Metal buildings are not allowed, except in the *Flight Line Area* and *Industrial Areas.*

In the *Flight Line Area,* and in the *Industrial Area*, when required in large-scale structures (hangars and industrial buildings), metal clad buildings may be used. However, such buildings should be provided with a base of brick masonry.



Patterned brick wall with metal fascia banding and punch-out windows

Flight line metal panel buildings should incorporate masonry base

III. Design Standards

B. *Architectural Design Standards*

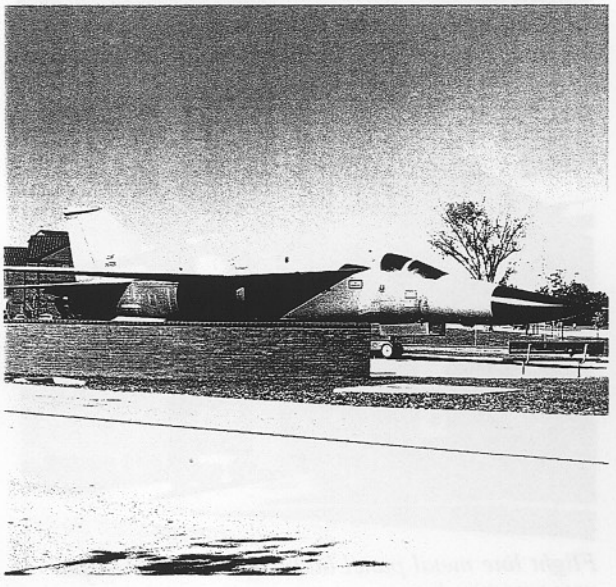
The base should match the material, height, and color of adjacent administrative or support structures. When used atop this wainscot base, the metal wall panels should be of pre-finished aluminum. In these land use areas, the ribs should be oriented vertically. To be acceptable, the finish of metal wall panel buildings must be provided with a 20 year guarantee against fading. Use of metal wall panel buildings requires the review and approval of the Base Architect and the Air Combat Command Architect.

Exterior walls in the *Residential Neighborhood Area* should be finished with brick. Metal siding, where dictated by reasons of economy, is acceptable. When metal siding is used, it should be atop a brick base of 3'- 0" minimum in height.

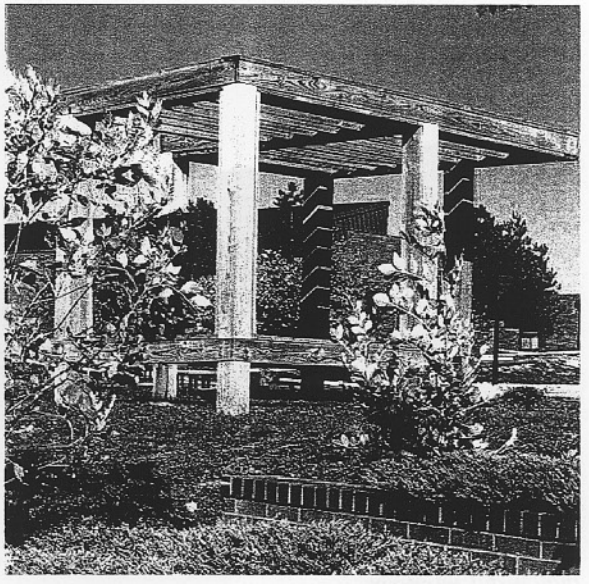
In the *Recreational Area,* exterior walls and/or columns of structures (picnic shelter, pavilions, barbecue enclosures etc.) should be built of brick. Wood columned structures are also acceptable.

b. Approved Material and Treatments

Note: Proprietary names for colors, textures and patterns are for the purpose of selection only. Other manufacturer's products may be acceptable, provided they closely approximate colors, textures,



Static display



Appropriate recreational structure

B. *Architectural Design Standards*

and patterns indicated and conform to all other specification requirements.

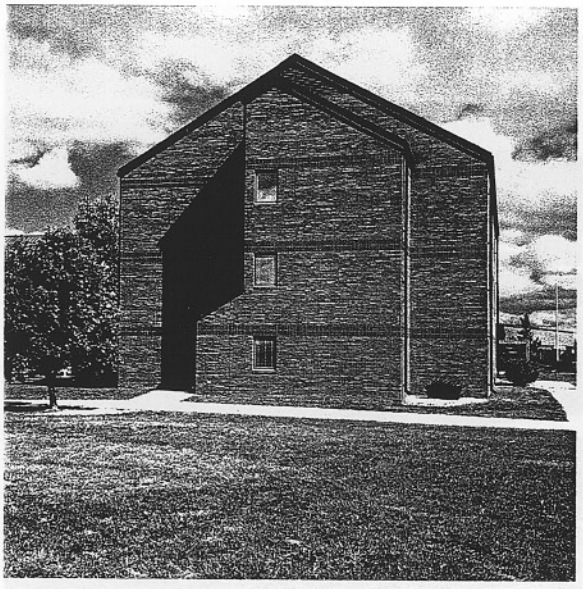
Brick Masonry (Primary)
Manufacturer: Acme Brick
Color: BL 121, "Cedar Valley"
Brick Masonry (Soldier Course/Accent Feature)
Manufacturer: Acme Brick
Color: BL 20, "Velour Mod"
Metal Wall Panels
Color: Fed Std # 23578, "Antique Linen"
Painted Surfaces (in brick wall)
Color: Fed Std # 20059
Painted Surfaces (in metal wall)
Color: To match wall color

2. Roofs

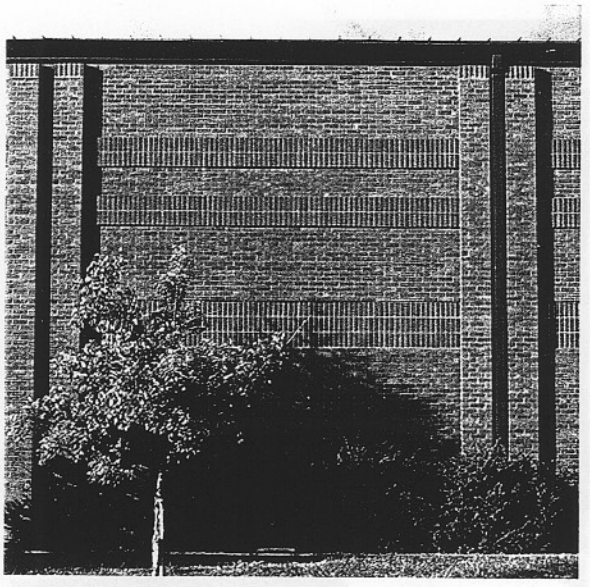
a. General Recommendations

Roofs should have a minimum of 7:12 pitch and be gabled at the ends. Roofs should be of pre-finished vertical standing seam metal. For community activity facilities in the family housing area, and single family, detached residential buildings, asphalt shingles are acceptable. Asphalt shingles should be of an architectural grade and should be warranted for a 30 year period.

Use of a low sloped roof is normally only allowed on buildings with large foot-



Well detailed brick patterning



Well detailed brick pier/downspout

B. *Architectural Design Standards*

prints, such as the base exchange, large supply buildings, etc. Any low slope roof must be approved by the Base Architect and the Air Combat Command Architect. If approved, low sloped roofs should have an EPDM membrane type roof system.

Roof overhangs are encouraged. Fascias should be of formed pre-finished aluminum. Soffits should be of perforated prefinished aluminum. Roofs of buildings with HVAC systems are to be insulated to at least R-30. Provide ventilation (soffit and ridge, or soffit and gable vent preferred) for all roof systems. Roof penetrations (vent piping, flues, exhaust fans, etc.) should be regarded as trim items and should be painted to match the roof. Roof penetrations should be located to the rear of the buildings, away from the street frontage, unless functionally unavoidable.

No equipment is permitted on roofs.

Gutters and downspouts are required on buildings with pitched roofs. Rain diverters and snowguards are required at all entrances. Interior roof drains are discouraged. Scuppers, where approved for low sloped or flat roofs, shall be of pre-finished aluminum and provided with downspouts.

Well integrated roof and exterior wall design

Well detailed masonry patterning

B. *Architectural Design Standards*

b. Approved Material and Treatments

Note: Proprietary names for colors, textures and patterns are for the purpose of selection only. Other manufacturer's products may be acceptable, provided they closely approximate colors, textures, and patterns indicated and conform to all other specification requirements.

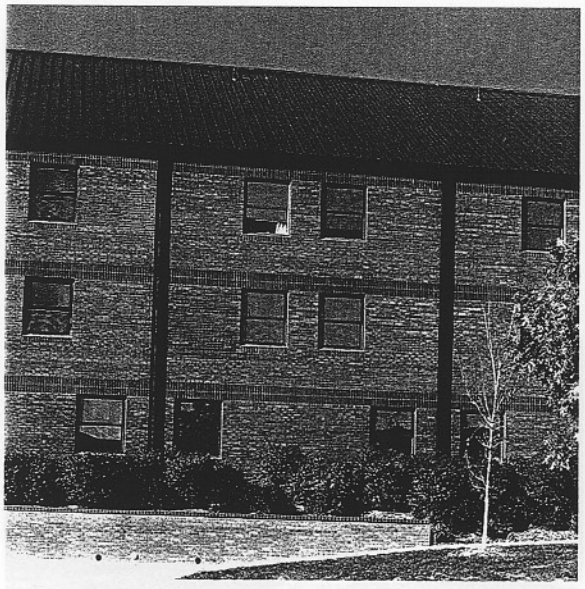
Vertical Standing Seam Metal Roofing
Color: Fed Std # 20059
Painted Surfaces
Color: Fed Std # 23578
Asphalt Shingles
Manufacturer: Timberline, GAF or approved equal
Color: To be selected from manufacturer's colors.

3. Doors and Windows

a. General Recommendations

Main entry doors should be of a glazed storefront type in thermally broken, "medium bronze," anodized aluminum frames. Provide a vestibule at all main entry locations. Glazing to be tempered, low-E insulated dual pane with ½" argon gas pocket. Secondary entrances, and exit doors should be factory primed insulated hollow metal (R-4 minimum).

In single family homes, exterior entry doors should be of pre-finished insulated metal (R-4, minimum). Factory primed,



Well detailed fenestration pattern

Environmentally compatible fenestration

B. *Architectural Design Standards*

field painted doors are acceptable, but not preferred. Storm doors are required. Vehicular service doors should be of "medium bronze" and should be insulated.

Generally, limit the amount of glazing on a building to 15% of the exterior wall surface area. Avoid large, unprotected expanses of glass in general, and especially facing in the northwesterly direction. Large expanses of glass may be acceptable when facing south to receive thermal gain in winter. In general, avoid skylights and clerestory windows. However, where functionally justified and carefully placed, these are acceptable.

A punched-opening vocabulary should be utilized. Ganged units of a limited extent are acceptable. Glazed units should be set a minimum of 2" back from the face of the exterior wall surface.

Windows should be operable and have double glazing (with ½" argon gas pocket) in thermally broken anodized aluminum frames. Triple glazing should be installed on walls where high noise levels are evident (refer to the Air Installation Compatible Use Zone Noise Contours). All outside glazing should be tinted. Color shading film is not permitted, unless factory applied to the glass.

Well detailed building entrance

Appropriate building entrance

B. *Architectural Design Standards*

In single family homes, windows should have double glazing (with ½" argon gas pocket) wood frames with factory applied white finish aluminum cladding.

b. Approved Material and Treatments

Note: Proprietary names for colors, textures and patterns are for the purpose of selection only. Other manufacturer's products may be acceptable, provided they closely approximate colors, textures, and patterns indicated and conform to all other specification requirements.

Hangar Doors
Color: Medium Bronze
Exterior Painted Doors/Windows/Trim
Color: Medium Bronze
Windows/Glazing (except at Residential)
Frame: Medium Anodized Bronze
Glazing: Bronze Tinted, Low-E

4. Hardware

a. General Recommendations

Door hardware should be selected and sized on a case by case basis for its specific function. In order to unify the quality and appearance of hardware basewide, the following recommendations are a guide to the finish and quality level expected of hardware that may not be specifically listed. All door hardware must comply with the requirements of ADA and UFAS.

b. Approved Material and Treatments

Note: Proprietary names for colors, textures and patterns are for the purpose of selection only. Other manufacturers' products may be acceptable, provided they closely approximate colors, textures and patterns indicated and conform to all other specification requirements.

Door Hinges: Exterior door hinges shall be heavy weight ball bearing. Interior door hinges shall be ball bearing or plain bearing.

Door Closers: Door closers shall be Grade 1, surface mounted, regular or parallel arm mount.

Exit Devices: Single doors shall have Type 1, rim exit device. Double doors shall have Type 2 vertical rod device. Finish of all exit devices shall be Satin Medium Bronze.

Locksets: Exterior and interior locksets shall be BMHA series 4000m Grade 1, lever trim (except in the Residential Neighborhood Area), removable core function as required (see BMHA ANSI

B. *Architectural Design Standards*

function F75-F93). Lever handles shall be provided at all locations requiring full accessibility. Provide "Best" locks for all work. The cores must be able to be interchanged with "Master" and "Grand Master" key systems.

Miscellaneous Hardware: Stops, kickplates, etc. shall match adjacent hardware.

Thresholds: Shall be clear finish aluminum. Exposed rubber parts on holders, stops and bumpers shall be gray.

5. Outbuildings/Garden Walls/Fences

a. General Recommendations

Out buildings, garden walls, and fences are required for multiple purposes throughout the areas of the base. These include security barriers, utility and dumpster enclosures, loading dock screens, retaining walls, and ancillary architectural and landscape features.

For all areas, grade mounted mechanical equipment such as cooling towers and air handling equipment shall be screened with a garden wall, plant material, or a combination thereof. All loading docks and dumpsters shall be screened with a wall 1' higher than the equipment. When screen walls are constructed for dumpsters, the open side shall be aligned so the truck picking up the dumpster will have access and can easily place the container within the enclosure. Dumpsters shall not be accessed from a street. Dumpsters shall not open towards a street or so that people can view into the opening from main building entrances. Garden walls should also be used to enhance building and neighborhood entrances and street intersections. Retaining walls, where required to accommodate changes in elevation, shall not exceed 4' in height. Grade changes which require retaining walls exceeding 4', must be terraced with a minimum 3' clear separation between each wall.

Well detailed screen/fence

B. *Architectural Design Standards*

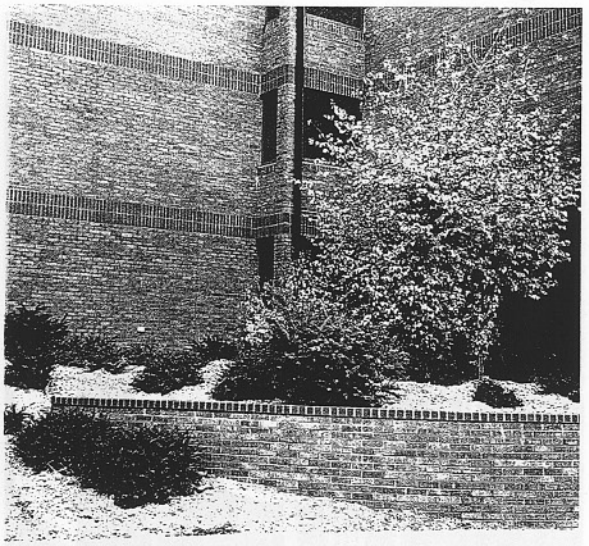
Materials for outbuildings, garden walls, and fences should visually match either the adjacent building exterior or a material integral to the landscape. No outbuilding shall be metal. The insertion of soldier courses is encouraged to provide a sense of scale, pattern, and texture to the wall surfaces. Decorative top courses can be used to provide accents to walls which are highly visible. Horizontal breaks, jogs, and variations in wall heights are encouraged to minimize the monotonous corridor effect of long continuous walls.

In the *Flight Line Area*, walls can be utilized to restrict access and simultaneously screen the parking areas along existing street frontage.

In the *Industrial Area,* walls can successfully contribute to screening the existing storage and loading areas.

In the *Residential Neighborhood Area*, entry sign walls can be utilized to demarcate each residential neighborhood into its own individual precinct: Woodview, Midland and Lakeside. This practice should be extended to any future residential development.

Well landcsaped screen fence



Well integrated garden/retaining wall

III. Design Standards

C. Interior Design Standards

WHITEMAN AFB INTERIOR DESIGN POLICY

PURPOSE:

To provide a comprehensive and consistent interior design policy for all facilities on Whiteman AFB.

(a) NEW CONSTRUCTION

(b) REPAIR/RENOVATION

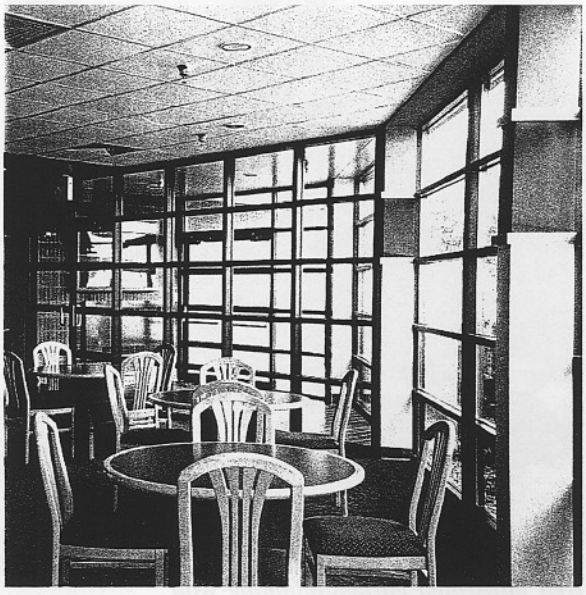
To provide a base interior design policy for all facility construction; guidance for architectural design firms, engineering firms, Corps of Engineers, and Whiteman AFB Operation & Maintenance programs.

COMPATIBILITY:

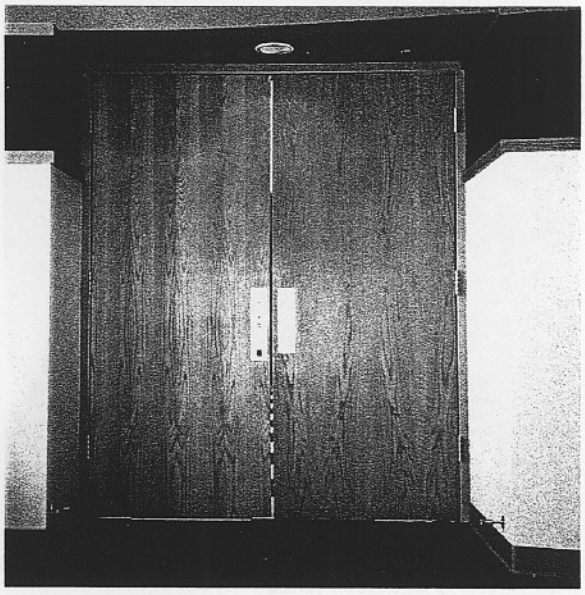
Interior design compatibility at Whiteman AFB shall be a cohesive approach to coordination of interior materials construction details, finish colors, and furnishings.

The above shall be attained in the following manner:

(a) Structural Interior Design (SID): Services include the selection and coordination of interior materials and finishes, which are structural surfaces or built-in features, which are integral or attached to the structure. This includes pre-wired workstations.



Appropriate interior



Well detailed entry

C. Interior Design Standards

(b) Comprehensive Interior Design (CID): Services include structure related finish selections as well as selection, arrangement, and coordination of furnishing packages (including procurement information, installation instructions, drawings, and cost estimates).

SECTION A: CONSTRUCTION/DESIGN PROGRAM GUIDELINES

A-1 All interior hardware in a building will be consistent and shall be brushed aluminum/stainless steel finish (ie., door pulls, plates, hinges); special applications of brass or other metal finishes to be applied on special design projects.

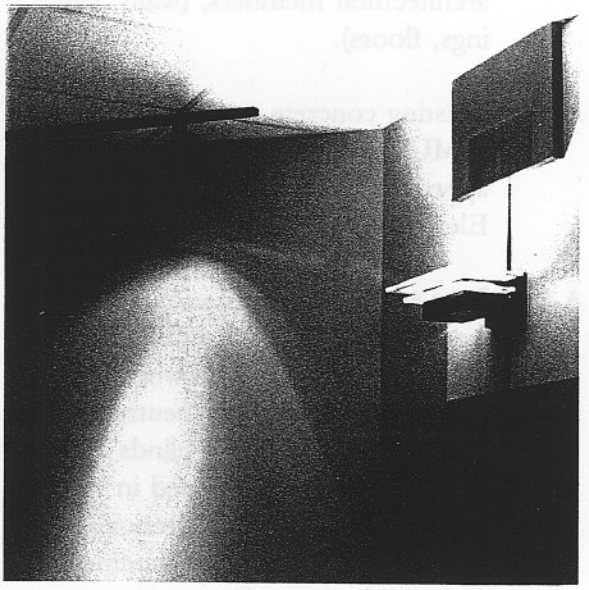
A-2 Fire protection accessories (bells, panels, etc.) shall be factory finished or field painted to match interior color scheme (wall in which item is installed).

A-3 Fire alarm pull boxes shall remain factory finish, (preferably stainless steel finish with RED letters).

A-4 Sprinkler heads to be recesses, Smoke detectors shall be color/white.

A-5 Electrical panels to be painted to match or to coordinate with wall in which they are installed.

Well detailed hall



Well detailed interior

III. Design Standards

C. Interior Design Standards

A-6 All conduit and cabling to be concealed in wall construction, (phone, electrical, computer, etc.).

A-7 Graphics, ie., interior signage shall conform to base standards, compatible with color scheme. Signage should have radius corners, white lettering with background as accent color. Lettering identification to be flexible with "in and out" slide, for room changes/demountable plaques, (as per base standards).

ADA standards shall apply.

Graphics SHALL NOT be permanently painted or applied to interior architectural members, (walls, ceilings, floors).

A-8 Existing concrete masonry unit walls (CMU) to be covered with material approved by CEC/Interior Design Element.

A-9 Base standards for interior window treatment shall be 1" mini-blinds, color to be coordinated with the interior color scheme, (neutral). Application of vertical blinds and draperies will be addressed in special areas pertaining to the interior architectural and aesthetic requirements, (color to be neutral).

A-10 All electrical switch plates, receptacles, communication plates, and covers, shall be color/ivory. (the exception to this would be a direct project need or application).

A-11 Placement of thermostat, fire extinguishers or visible control devices mounted on walls or ceiling shall be coordinated with the interior design features, (placement and color).

A-12 Lighting shall be fluorescent or incandescent type with the fixture coordinated into the overall interior design scheme, (aesthetic coordination).

Fluorescent light fixtures shall have standard light lenses, (1/2" silver paracube or silver parabolic.

A-13 Wall finishes may be composed of: gypsum board on steel studs, gypsum board on block wall, plaster on block wall, or other similar systems. Wall can be covered with paint, wallcovering, brick, tile, stone, multi-flec paint, or other similar systems.

A-13-1 These areas may have the following finish material:

Painted block wall, burnished block walls, multi-flec paint, or similar systems where applicable;

C. Interior Design Standards

a. Maintenance bays
b. Large bay areas
c. Equipment/Utility rooms
d. Storage rooms
e. Electrical rooms
f. Mechanical rooms
g. Secondary egress stairwells

A-13-2 Installation for wall covering shall be made by replacing cutting blades after each (16') of seam cutting. No frayed seams or excess glue shall be visible. Corners receiving wallcovering shall be wrapped, (1" to 2") inside/outside.

A-13-3 Bumper guards may be used in areas that warrant high traffic, (similar to those used in hospitals and health care) color/neutral.

A-13-4 For each facility project requiring wallcovering or interior finishes, the contractor shall select a room as the "prototype room" for test and approval. Whiteman Interior Design Element shall inspect the prototype room to set standards, (approve/disapprove) for all finish comparisons.

A-14 Carpeting shall be a patterned type in all facilities with the following exceptions:

a. Bold tweeds/pattern carpet, are authorized throughout religious facilities and enclosed areas of 500 square feet and less. A bold tweed is defined as a carpet having two or more distinct colors.
b. Solid color carpet is permitted in all General Office (07) and Wing Commander office suites.
c. Solid color carpet is permitted in Distinguished Visitors Quarters.
d. Carpet borders: shall be used in the following areas; commanders offices, conference rooms, reception areas, corridors, executive/distinguished areas.

A-14-1 Carpet construction: must be tufted or woven, have a minimum 28oz face weight of yarn per square yard. Level loop should be used for most facilities and particularly in areas requiring hard wear and firmer surface.

Plush cut piles are to be used in executive, distinguished, and residential areas.

A-14-2 Carpet for fitness center/athletic usage, medical/health care facilities shall be anti-microbial, solution dyed.

A-14-3 Carpet fiber to be 100% nylon or nylon blend.

III. Design Standards

C. Interior Design Standards

A-14-4 Projects requiring carpeting shall have submitted along with carpet samples for approval, an installation plan showing carpet seam locations.

A-14-5 Carpet padding: shall be of a quality equal to synthetic hair and jute, or dense rubber, (no re-bond padding foam). Padding shall be used in residential type facilities and sleeping quarters.

A-14-6 Unless specified, all carpet installations not mentioned above, A-14-5, shall be direct glue down applications.

A-14-7 Base molds: interior base molds shall be vinyl type, roll goods only. Inside and outside corners shall be wrapped, (no pre-formed corners).

A-15 Natural finish/painted concrete floors: are limited to:

a. Maintenance bays
b. Utility rooms
c. Electrical rooms
d. Mechanical rooms
e. Shop areas

A-16 Vinyl composition tile: may be used in some facilities, commercial grade sheet goods should be used where applicable. VCT usage is limited to:

a. Maintenance bay areas
b. Utility rooms
c. Large equipment storage rooms
d. High traffic corridors in maintenance facilities

A-17 The following are acceptable floor finishes to be used as function and budget allow.

a. ceramic/quarry tile
b. aggregate/masonry flooring systems
c. commercial grade sheet goods
d. low profile rubber flooring
e. athletic flooring
f. carpet/carpet tile

A-17-1 Entry mats: all major entry areas to facilities shall have a recessed mat similar or equal to "tredline series", removable grid type with carpet strips, (color coordinated).

A-17-2 Light reflective, non-metallic surface floors shall have a pre-mixed hardener, ready to use, dry shake, finish and cure, at the job site. Application to concrete floors is limited to:

a. Aircraft hangar bays/docks
b. Maintenance bays/docks

A-18 Furnishing styles: Whiteman AFB shall aim to establish a consistency and continuity in facility interiors as follows:

C. Interior Design Standards

a. Traditional style interiors and furnishings (executive wood) shall be limited to officer levels of 06 and above. These areas shall include the commander's office suite, (deputy, executive, secretary, and conference room).
b. Contemporary style interiors and furnishings shall be used in all other areas not mentioned above.
c. Commercial grade furnishings must be used in all facilities. The above policy sets a precedent for facility interiors however, exceptions may arise to pertinent design projects.

A-19 Ceilings: exposed ceilings are allowed only;

a. when used as a deliberate design element
b. maintenance bay areas
c. utility/mechanical rooms

A-19-1 Lay-in Ceilings: standard lay-in acoustical ceilings shall be; fissured/white/non-directional/fire guard UL label/class A. Tee bars shall be color white.

a. 2x2 size shall be standard in high profile areas, ie., (main corridors, office suites, conference, etc.)
b. 2x4 size shall be standard in maintenance and utility areas or in renovation projects to match existing.

A-19-2 Sheetrock ceilings may be used for soffits, wet areas, and where appropriate requiring smooth surfaces, (design features).

SECTION B: CID/COMPREHENSIVE INTERIOR DESIGN AND SID/STRUCTURAL INTERIOR DESIGN

The following items to be included for CID and SID projects for the designing agents usage:

B-1 Air Combat Command and Whiteman AFB/CEC, the Corps of Engineers, will confirm or revise design schedules with the designing agents.

B-2 Furniture styles for CID's will be coordinated by Whiteman AFB interior Design Element/CEC, and the designing agent, to be approved by the facility user during project reviews.

B-3 Whiteman AFB, Interior Design Element/CEC, and the designing agent, will review all CID and SID packaged. Review comments will be directed to the appropriate project manager for coordination.

III. Design Standards

C. Interior Design Standards

B-4 Existing furnishings of facility users required for a project shall become part of the CID package, to be incorporated in the floor plan layouts and marked accordingly. These items to be identified at pre-design meetings.

B-4-1 Specifications for standard office seating will be of a manual adjustment mechanism. Areas that require special tasking such as Radar approach Facilities, labor intensive and technical job functions, may use a pneumatic, (gas) mechanism on seating units where applicable.

B-4-2 Highback executive seating shall be limited to the following;

a. Commanders offices.
b. Executive conference rooms.
c. Special tasking functions requiring high level ergonomic attention; ie., Radar Approach, control Tower, Battlestaff, employees with doctor written requirements.

B-4-3 Sofas: may be used in the following areas, providing square footage will allow usage;

a. 06 officer levels and above.
b. commander offices.
c. reception/lounge/break rooms/health care.

B-5 Substitutions or changes made by users after completion of the CID or SID package must be approved by the Facility/Squadron commander, with coordination by the Base commander and the Interior Design Element/CEC.

B-6 Installation of furnishings when not supplied by an outside contractor shall be coordinated by the Facility Manager and the project users. Users to receive a "furnishings installation plan" for furniture placement coordination.

B-6-1 All CID packages to be supplied with an installation drawing showing furniture placement of new and existing furniture/equipment, (to be coded accordingly).

B-7 Presentation boards prepared by the designing agents are to be done on a neutral format, (no colors), ie., white, ivory, beige, or grey.

B-7-1 Presentation Boards are to be given to Whiteman AFB interior Design Element/CEC for review.

B-7-2 Photographs of presentation boards cannot be used in place of actual presentation boards for the design review process.

C. Interior Design Standards

B-7-3 CID and SID packages/presentation boards to be accompanied by a cover letter stating action required for review and suspense dates.

B-8 Designing agents must allow at least (12) working days from receipt of review packages by Whiteman AFB, for the review process, before scheduling a review meeting.

B-9 Professional Interior Design can be accomplished only by a professional Interior Designer. Air Combat Command defines a professional Interior Designer as a person qualified by education and experience. Designers who work on ACC projects must have a 2,3, or 4 year Interior Design Degree plus work experience equal to 6 years combined education experience. The designer is preferred to have at least one year experience working on government projects. If this is not the case, a senior designer who meets this criteria should carefully review the project before any presentation is made.

B-10 The Whiteman AFB Interior Design Element/CEC will be the spokesperson for all CID and SID coordination and decisions.

SECTION C: COLOR/FINISHES

C-1 Colors for interiors will be determined by users within the parameters of functionalism, maintenance, and psychological impact.

C-2 Color is a SALIENT characteristic to the overall design integrity of a project.

C-3 A neutral palette of color shall be incorporated as a general backdrop for furnishings and architectural members with a minimum use of color accent, ie., (architectural interior details and points of interest, upholstery items, art work, etc.)

C-4 All door jambs/trim, (metal) and base molds, (vinyl) shall be the same in color per facility. The color shall coordinate in tone with the facility walls and flooring materials. Trim and base colors shall be a neutral color.

C-5 Only ONE species of wood (finish) will be used throughout an entire facility, ie., (all oak or all medium oak). This pertains to doors, interior case work, base molds, door jambs/trim, furnishings, etc.

III. Design Standards

C. Interior Design Standards

C-6 Mahogany and walnut finishes are only permitted in the following facilities;

a Bldg 509/509 Wing Headquarters.
b. Bldg 48/442 Wing Headquarters.
c. Distinguished Visitors Quarters.
d. Visiting Officer Quarters.
e. Bldg 35/Distinguished Visitor Lounge

All other facilities shall be standard in Light or Medium Oak finishes.

SECTION D: BASE LEVEL PROJECTS/ OPERATIONS AND MAINTENANCE

D-1 Base Civil Engineering/Interior Design Element services can be requested in the following manner;

a. AF form 332 (Base Civil Engineering work request) to be filled out by user stating scope of Interior Design services required, ie., (interior finish selection, space planning, furnishing coordination/specification).

b. Letter of Intent to Civil Engineering/CEC, stating scope of services required, (include organization, point of contact, phone number, and funding source).

D-2 Whiteman AFB facilities wishing to coordinate "self help" projects must obtain "approval" form Civil Engineering/CEC/Interior Design Element. The following materials must be installed by a professional contractor to maintain factory warranties and maintain design standards;

a. carpeting
b. floor and wall tile
c. wallcovering
d. cabinet/millwork

D-2-1 Traditional styled wood moldings and architectural details shall be limited to officer levels 06 and above. These areas shall include the commanders office suite, (deputy, executive, secretary, and conference room areas).

Wood paneling shall be used in Wing Command offices only.

D-2-2 Contemporary styled wood moldings and architectural details shall be used in all other areas not mentioned in D-2-1.

D-3 Furnishing packages procured shall be made with the complete intent of including existing furniture items retained buy the user. (utilization of existing furniture and equipment).

C. Interior Design Standards

D-4 Artwork: shall be coordinated by the Interior Design Element/CEC for facility standards, applicable to all "common areas". Common areas shall apply to the following;

a. entry areas
b. hall corridors
c. reception rooms
d. conference areas
e. break rooms
f. open office areas

D-4-1 Artwork may be coordinated by users in the following areas;

a. private offices

D-4-2 Mirrors: wall-hung mirrors shall be place in appropriate areas by the Interior Design Element/CEC; (appropriate areas apply to the following)

a. closet interiors
b. behind closet doors
c. behind storage/office doors
d. restrooms

D-4-3 Ceiling fans: shall be used in residential type facilities only, or as an intricate detail to building architectural design.

D-5 Furnishing Procurement: facilities wishing to procure new furnishings are to coordinate as follows:

1. obtain specifications from Whiteman AFB Interior Design Element/CEC, (based on facility standards).
2. obtain Standards Approval Letter from Whiteman AFB Interior Design Element/CEC.
3. obtain 509/Wing command signature, (for packages over $2500).

D-6 All furniture items for procurement entered into Base Supply, Base contracting, or Credit Card purchase, shall be accompanied by an Interior Design Standards Approval letter. Available through CEC.

D-7 It is the responsibility of the user to order and install purchased furniture and equipment items. Direction can be obtained from the Interior Design Element/CEC

D-8 It should be the goal of each facility as well as Air combat Command direction, to be standardized in one major furniture manufacturer for seating and work station, this allows for the following;

C. *Interior Design Standards*

a. flexibility in internal building changes.
b. a consistent and cohesive building environment depicting a professional image.
c. cost savings in quantity procurement.
d. service/maintenance control.

D-9 O&M Pre-wiring Construction: pre-wiring for voice and data requirements shall be included in all Operation & Maintenance construction planning with the following specifications;

a. interior wall conduit.
b. level V twisted pair with 8 each 24 gauge conductors.
c. wall/floor jacks - AMP-45.8 pin female connector.

D-10 Establishing a maintenance schedule for interiors is a user responsibility, but design input is essential. The Interior Design Element/CEC can assist the user by;

a. supplying manufacturer suggested maintenance information,
b. emphasizing the importance of a regular maintenance schedule.
c. making the user aware they may have to regulate items/accessories incorporated in building spaces, ie., (personal items, plants, posters, artwork, public notices).

D-11 New building facilities may not undergo any interior structural or interior finish change for 13 months after the turn over dated of the facility to the Air force. After said period, facility users may up-grade areas with Civil Engineering approval and interior Design coordination.

SECTION E: REVIEWS

E-1 The Whiteman AFB Civil Engineer Flight will attempt to review each facility on base annually and report findings of inconsistencies in design aesthetics and finish deficiencies. These findings will be documented provided to the appropriate commanding officer of the facility for attention to correcting these issues.

D. Landscape Standards

The Whiteman Air Force Base Landscape Development Plan dated August 1995, provides detailed landscaping guidelines with specific requirements to be implemented during the construction and maintenance phases of new or renovation projects. These Landscape Architecture Standards are intended to establish a conceptual framework within which those guidelines are executed.

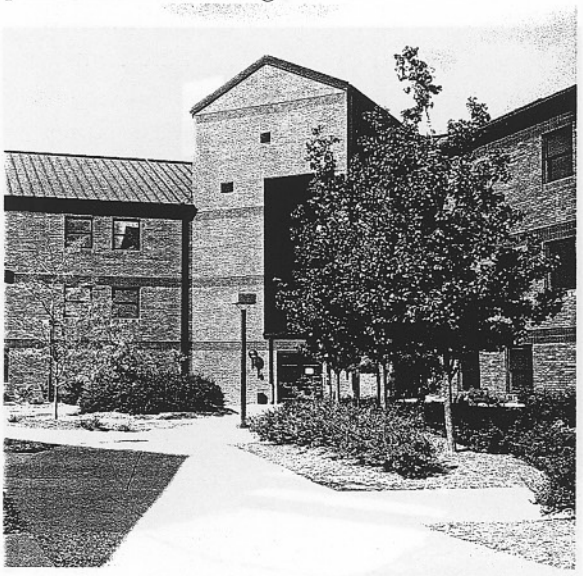
Landscape Architecture can be used to help unify the base as a whole yet still provide identity from structure to structure and area to area. The outcome of this will be an overall visual continuity which will serve as a backdrop for the buildings. Careful consideration should be given to respond to site context, open space, landmarks, views, vistas, streetscapes, and the preservation and protection of existing trees.

1. Planting Design

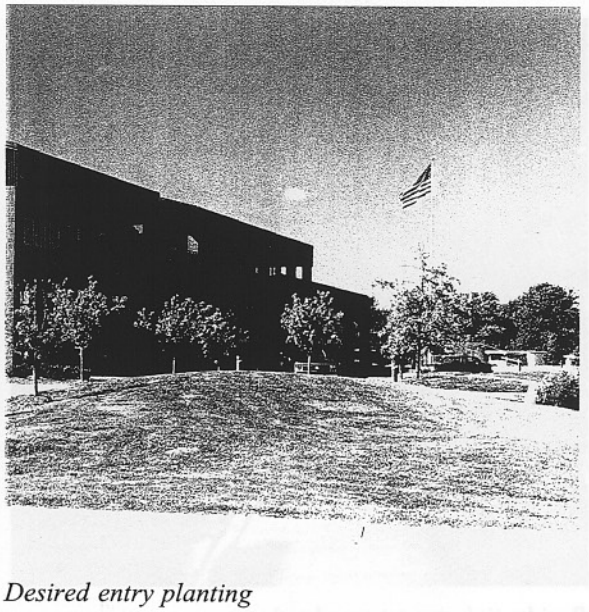
a. General Recommendations

Use plant material to suit the environment. Xeriscaping principles shall be followed which encourage the use of native, low water using, drought tolerant plant material.

The landscape shall vary to denote different areas such as building entrances, entry drives, foundations, pedestrian walkways, intersections, buffers and open space. (Refer to Open Space: Street Walls, Yards and Setbacks; Streets & Sidewalks.) Formal plant arrangements shall be used at administration and



Low water use and low maintenance plant material



Desired entry planting

III. Design Standards

D. Landscape Standards

community support facilities and along primary streets. Informal plantings shall be used at dorms, mission and industrial areas, while recreational areas shall be planted with a naturalized concept.

Different species of plants should be used to eliminate monocultural plantings and create diversity. However, where groups of the same species are used, massing is required.

Mechanical equipment, transformers, loading docks and dumpsters shall be screened with a combination of plant material and walls. Plant materials shall be installed at a size and spacing which softens the screen walls. (Refer to Outbuildings/Garden Walls/Fence for additional information.)

Landscaping around buildings throughout the base should enhance the architectural character and specific use of the site. Blend the landscaping into the natural environment whenever possible.

The fronts of buildings should be landscaped in an inviting and aesthetic way. The building entrance should be enhanced to help create a focal point.

Currently, large expanses of turf are used in underdeveloped areas. In areas which will not be developed beyond their current level, landscaping and maintenance should be kept to a minimum, and

Residential street tree planting

Desired building entrance planting

D. Landscape Standards

a native prairie grass should be used. Native prairie grasses in combination with minimal landscaping will provide a landscape which blends directly into the natural environment.

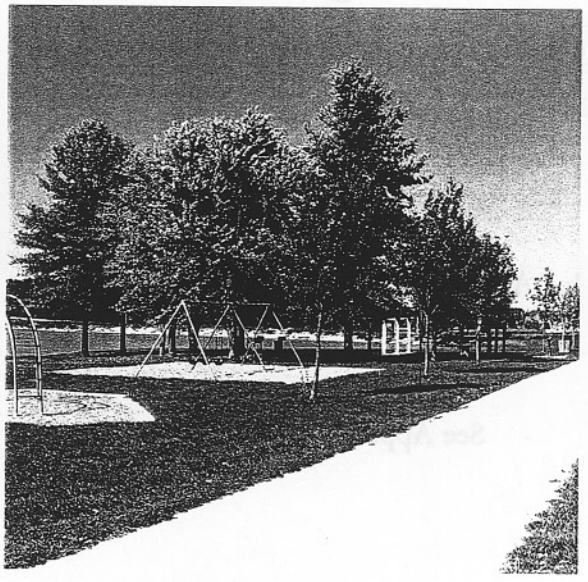
Within the *Mixed Use Central Area,* the plant materials should be used to accent building entrances within this area. Buildings should be landscaped with formal or informal plantings as outlined previously in this section.

The *Flight Line Area* is a unique area since most of the landscaping needs are along Arnold Avenue. Brick and board garden walls along with informal landscaping may be used to enhance this area. (See Outbuildings/Garden Walls/ Fences).

Plant materials can be installed in free form natural arrangements in areas between buildings. Buildings that have entrances which will accommodate landscape elements shall be enhanced with plant material.

The *Industrial Area* currently has large expanses of natural grasses as its primary landscape material. In addition to this generic planting, building entrances should be enhanced with special planting arrangements. Loading and storage areas shall be screened with plant materials and walls. Open spaces shall be left as native grasses to help reduce maintenance.

Natural landscaping at lake edge



Jogging trail and play area at park

III. Design Standards

D. Landscape Standards

Within the *Residential Neighborhood Area,* landscaping of front yards should provide a diversity of plant material which will help create individuality from house to house. Refer to Streets and Sidewalks (p 31) for structures plantings.

The *Recreational Area* at Whiteman Air Force Base is a unique feature which consists of lakes and waterways with native vegetation surrounded by large fields of turf. This area weaves throughout the base and separates the *Mixed Use Central Area* from the *Residential Area.* Landscaping within this area should complement the existing, native plant materials and informal groupings for areas which are to be kept natural. For areas where organized active recreation will occur, turf grasses shall be used. The existing pathway system provides walking, jogging and bicycling routes throughout this area. Areas for picnicking and relaxing have been located along these pathways.

b. Approved Material and Treatments

Plant Material

- See Appendix 1 for Plant List

2. Irrigation

a. General Recommendations

Irrigation is not required and is permitted only as an exception to the standards. For detailed information refer to the Whiteman Air Force Base Landscape Development Plan.

3. Site Furniture

a. General Recommendations

Site furniture basewide should be brought to a uniform standard. Furniture such as benches, trash receptacles, bicycle racks and tables, shall be capable of being used

Desired shade structure/picnic shelter in Recreational Area

D. Landscape Standards

across districts. Gazebos and shade structures should be constructed of materials which reflect the architecture of surrounding buildings.

Large barbecues should be constructed of brick masonry units to match the architecture of adjacent structures. Pedestal mounted grills can be used for smaller areas or adjacent to living quarters.

b. Approved Material and Treatments

Wooden benches shall be similar to Model # 8 and # 4 by Victor Stanley Inc. Benches for formal and informal areas shall be similar to the Plexus collection by Landscape Forms. Color shall be brown.

Wood tables and seats for informal areas shall be similar to Model CP-4 by Victor Stanley. Wood picnic tables used in naturalized areas shall be similar to Model WFG by Victor Stanley.

Trash receptacles for formal and informal areas shall be similar to Model PK5002-20-42 by Landscape Forms. Color shall be brown. In naturalized areas, wood slat trash receptacles shall be similar to Model R 316 with a steel dome top by Victor Stanley Inc.

Typical picnic table

Bench

III. Design Standards

D. Landscape Standards

Concrete bicycle racks shall be similar to ones manufactured by Alpha Precast and shall be used in all areas of the base.

Tree grates shall be used in all areas of the base and be similar to Model R 8752-A 180 square by Neenah Foundry Co.

Planters shall be used at building entrances in formal and informal areas and may be grouped together. Planters shall be similar to Design Model D by Dura Art Store. Planters shall have a minimum height of 17" and a light sand-blasted finish and tan color.

Ash urns shall be similar to Model AU-D by Dura Art Store and color and finish shall match planters.

Bench

Bicycle rack

E. Signage Standards

The signage standards are governed by Air Force Pamphlet 32-1097, ACCI 32-1054, and Whiteman Facility Improvement Plan. The following provides an overview of AFP 32-1097 and ACCI 32-1054.

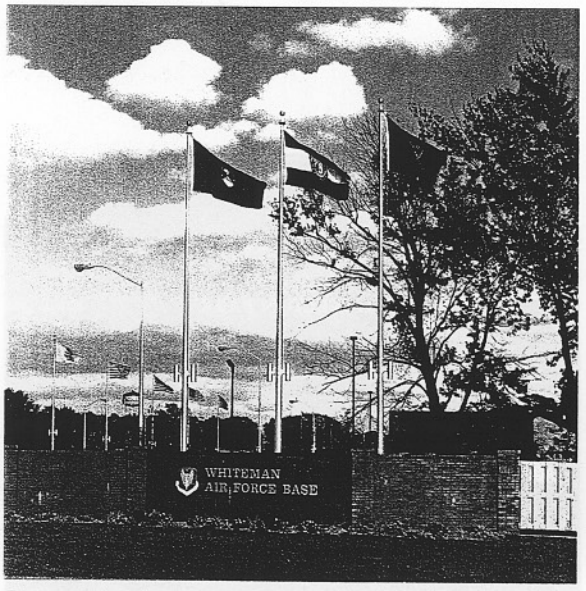
The graphics system shall serve to identify buildings, inform users, and direct vehicular traffic in an aesthetically pleasing manner. Signs are to be compatible to architectural elements and enhance the overall design of the buildings. Effective signage should serve as a unifying element. The Base Planner shall review and approve all proposed signs.

1. General Recommendations

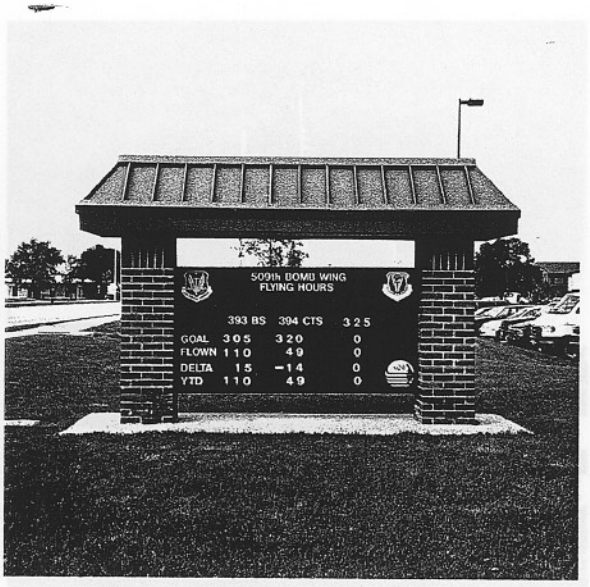
Signage should be used to unify the base and provide an effective identification system. Continuity of materials, fonts, and colors will help simplify the circulation through the base.

The letter style, for all exterior building signs and temporary signs shall be Clarendon. Clarendon Medium shall be used for primary information and Clarendon Regular shall be used for secondary information.

Individual lettering attached to building structures, monuments and entryway glass shall be metallic, beige or white. All other types of signs shall have white lettering on a brown background, except signs pertaining to safety which are governed by national standards.



Base entry sign



Military identification sign

III. Design Standards

E. Signage Standards

Major signs such as those at base entrances can be designed to be more decorative and can vary from the general recommendations. Specialty signs with message boards shall be as approved by the Base Architect.

Materials for signs shall be aluminum, galvanized steel, and non-ferrous materials. Wood posts shall not be used. Internally lighted signs are not permitted. If lighting is required, use external flood or spot lights.

The exterior sign types for use on the base are as outlined below:

a. Identification Signs

A landscape plan indicating all site signs showing locations and height of the signs above grade must be submitted for review and approval to the Base Planner.

Identification signs may be one or two sided. Two sided signs shall be installed perpendicular to the roadway.

(1) Base Identification Signs: These are located at Base entry points. One type of base identification sign is to be used - the Main Entrance Sign which should be one sided since it is viewed from one direction only.

Building sign

Community identification sign

E. Signage Standards

(2) Military Identification Signs: These identify military facilities and activities.

There are six types of military identification signs which vary in size and design elements to distinguish different levels of organization. (Refer to AFP 32-1097 for types and size requirements.)

Function signs are located on the building. Information on organizations and street addresses are displayed on the door. The use of motto's, names or titles of individuals is prohibited.

(3) Community Identification Signs: These identify facilities and activities used for non-military purposes. The use of community and commercial related symbols is permitted only by exception.

b. Direction Signs: These are used to direct vehicular traffic to specific locations. All signs shall be faced with brown reflective sheeting for the background and white reflective materials for the graphics.

c. Regulatory Signs: These signs are used to direct vehicular traffic to specific locations. Highway Standards, Base Warning Signs and Parking Regulation Signs are considered Regulatory Signs.

d. Motivational Signs: These signs serve to increase morale.

Electronic messaging can be used for this sign type.

e. Information Signs: These signs provide educational information and directional guidance for visitors.

f. Wall Mounted Signs: The Base Architect will decide the appropriateness of wall mounted signs.

g. Temporary Signs: Temporary signs will not be permitted except as described below.

All temporary signs shall be fabricated to follow the style and guidelines as specified and illustrated.

Temporary construction signs shall be permitted during the construction of a facility and shall be removed no later than one week after issuance of the certificate of occupancy. One project sign shall be permitted and shall be parallel to the street with locations subject to approval of the

E. Signage Standards

Base Planner and should include only the following information:

- Building Name
  Major Tenant(s)
- Architect
  Consulting Engineer(s)
  Landscape Architect
- Developer (when applicable)
- General Contractor

Subcontractor signs shall not be permitted. The temporary construction sign outlined above shall be located within a minimum of 5' of the property line and adjacent to the construction trailer. Construction signs will not be permitted off site except as needed to direct construction traffic.

All temporary signs shall be free standing ground mounted and signs of this nature shall not be affixed to any building.

F. Lighting Standards

1. General Recommendations

The design objective for all site lighting is to provide a uniform system of functional lighting in an aesthetically pleasing and visually unobtrusive manner. For detailed information, refer to the Whiteman Air Force Base Landscape Development Plan.

Exterior accent lighting of plant materials, signs and buildings shall be achieved with hidden light sources. These include surface mounted fixtures, lamps recessed in building soffits, overhangs, walls, lamps recessed in the ground, and lamps hidden by plant material.

Roadway light fixtures should be uniform across the *Mixed Use Central Area, Flight Line Area,* and *Industrial Area.* Consistent fixtures provide cohesiveness and help link the areas together. The *Residential Neighborhood Area* should have fixtures for its streets which set it apart from the rest of the base and provide a greater sense of residential character. Within the *Recreational Area* another type of fixture for walkways and jogging trails should be used. This fixture will identify the trail system which interconnects the different uses within the area.

All lighting shall be energy efficient high pressure sodium.

Typical Cobra-type roadway light

Typical parking light

III. Design Standards

F. Lighting Standards

Lighting levels will be determined as specified in the "Lighting Handbook of the Illuminating Engineering Society," most recent edition. Lighting levels in parking lots shall average 1.0 foot candle at grade.

2. Approved Material and Treatments

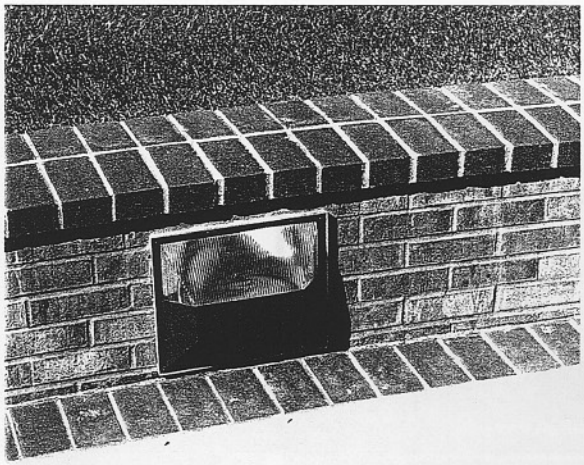
The fixtures indicated below are for all areas unless noted later in this section.

Parking lot fixtures and poles shall be a shoe box type to match those found throughout the Base, unless otherwise specified by the Base Architect.

Roadway light fixtures and poles shall be a Cobra head type to match those currently used on base, unless otherwise specified by the Base Architect.

Low bollard fixtures or landscape lighting for walks and building entries shall match those found throughout the Base, unless otherwise specified by the Base Architect.

Building mounted lights shall be absolute cut-off type fixtures and shall be recessed. Color shall be dark bronze. Wall mounted lights for lighting stairs and sidewalks shall be manufactured per Whiteman Landscape Standards, unless otherwise specified by the Base Architect. Color shall be dark bronze.



Building mounted lights

Landscape accent lighting

F. Lighting Standards

Building and sign flood lighting shall be per Whiteman Landscape Standards, unless otherwise specified by the Base Architect. Color shall be dark bronze.

Landscape accent lighting shall be per Whiteman Landscape Standards, unless otherwise specified by the Base Architect. Color shall be dark bronze.

Residential Area
Roadway light fixtures and poles shall match those currently used on base, unless otherwise specified by the Base Architect.

Recreational Area
Jogging trail and walkway lighting shall match those currently used on base, unless otherwise specified by the Base Architect.

III. Design Standards

G. *Engineering Standards*

1. Civil

a. All civil work should indicate all calculation in design analysis and show design criteria on drawings and shall conform to the latest editions of the following:
   (1) State of Missouri Department of Transportation) Standard Specifications;
   (2) The Missouri Department of Transportation Standard Details;
   (3) The Johnson County Public Works standard drawings for civil work.
   (4) The Uniform Building Code (UBC);
   (5) The UBC Standards;
   (6) The Uniform Plumbing code.

b. All civil work shall conform to the requirements of:
   (1) The Uniform Federal Accessibility Standards (UFAS);
   (2) The Americans with Disabilities Act (ADA);
   (3) The most stringent requirements shall apply.

c. Site Plans
   Base Planner will require approval of site plan.
   (1) General base plans and some more specific as-built plans for the existing buildings and utilities are available on request, however they may be incomplete and inaccurate.
   (2) Existing conditions will need to be surveyed and verified by the A/E.
   (3) A new site plan shall be developed on AutoCAD for project areas at 1" equals 40' or larger (1" equals 20') showing all existing utilities, sprinklers, facilities, features, trees, ponds, etc.
   (4) One foot contours shall be accurately shown, with bold five foot contours.
   (5) Key spot elevations shall also be shown accurate to 0.1' for land features and accurate to 0.01' for structures, pavements, and slabs.
   (6) Finish drawings must include horizontal and vertical control references to actual survey data control points.
   (7) Benchmarks and key work/control points must be shown on site plans with coordinates (State plane). Both AutoCAD disk copies and mylar hard copies shall be furnished to the Government upon completion of the project.

d. Gas Service
   (1) The design agent should expect to coordinate and arrange new facility connection to the natural gas line.
   (2) Contract plans should clearly identify connections necessary and the party responsible for the work.
   (3) Gas lines shall have maximum working pressure 50 PSIG.
   (4) Underground gas piping shall be non-metallic.
   (5) Refer to Mechanical/Plumbing Section for additional information.

e. Sanitary Sewer Service
   The minimum service size for a new facility shall be 4". If required, a new

G. Engineering Standards

main shall be designed and constructed to serve the site from the closest manhole which can be reached via gravity flow. New sewer mains shall be minimum 8".

(1) The A/E shall study the most economical gravity sewer design option.
(2) Verify capacities of existing sewer to handle additional flows once they are determined
(3) Sewer lines shall be installed according to manufacturer's recommendations with not less than a 2.5 fps hydraulic velocity flow; minimum main from building shall be 4".
(4) Sewer manholes shall be precast reinforced concrete manhole sections with two exterior coats of heavy duty bituminous. Manholes shall conform to ASTM C478-72. Position manholes at every 45° and 90°, and a minimum of 300' apart.

f. Manholes/Cleanouts
(1) Use standard precast manholes with nominal 25" diameter cast iron cover.
(2) Maximum manhole spacing shall be 400'.
(3) A new manhole or cleanout shall be required if there is a significant change in direction for the new line.
(4) Minimum wastewater flow velocity is two feet per second.

g. Water Supply
(1) Verify that existing water mains are adequate to handle fresh water demands of the project, including fire protection and irrigation.
(2) Wet barrel fire hydrants shall be supplied to the building site off existing water mains in accordance with NFPA.
(a) Fire hydrants shall be Watrous.
(b) Fire hydrants shall be provided with Hydroshield hose connection couplers.
(3) A water demand analysis shall be made to determine flow and capacity requirements, line sizes, routing, as well as which line or lines are best to tie into.
(4) Cathodic protection is required on any metallic piping.
(5) Use PVC type C-900 for underground service.
(6) Install a water meter at each new facility.
(7) Disinfect the plumbing lines in accordance with AWWA and UPC standards and provide for bacteriological and pressure testing of the water after the building is complete.
(8) Water piping shall be designed for a maximum velocity of 3 fps, or manufacturer's recommendation, whichever is less. Plastic piping shall be pressure pipe capable of withstanding 165 psi. Trenching, backfilling, and pipe installation shall be done according to manufacturer's

G. *Engineering Standards*

recommendations. Pipe shall have minimum cover of 3'.

(9) No pressure piping shall be allowed under slabs unless it is in a crawl space or pipe chase except for the service entrance. The service entrance shall be perpendicular to the slab edge and not extend more than 5' under the slab.

(10) Provide reduced pressure backflow preventors at the service entrance. The mechanical make-up water system shall have a separate air gap type (10 gallon tank and float with pressure actuated gear driven pumps) backflow prevention device.

h. Storm Drainage

(1) The building site shall be designed such that 100-year flood plain shall be at least one foot below finish floor elevation.

(2) Culverts, storm drains, and catch basins shall be sized to handle a 25-year storm.

i. Site Drainage

(1) Drainage shall generally be surface drainage away from building with paved areas sloping a minimum of 1%; earth areas a minimum of 2%; and pipes, gutters and swales a minimum of 0.5%.

(2) Use bituminous coated CSP or RSP for culverts.

(3) Use precast concrete catch basins with cast iron grates.

(4) Connect downspouts to underground stormwater or provide concrete splash blocks at outlets of downspouts.

(5) Where slope exceeds 20%, a system of erosion control should be provided.

j. Soil and Foundation Conditions

(1) Site specific soil borings are required to determine soil bearing, pH and resistivity characteristics.

k. Pavement/Parking Materials

(1) Asphalt road pavements: For parking lots and secondary housing roads, the minimum requirement is 4" thick asphalt concrete on 6" class 2 aggregate base. For asphalt roads, pavement shall be a minimum of 5" thick (in 3" and 2" layers) with a 12" aggregate base course (also for areas used by large trucks and tractor trailers).

(2) Parking lots shall be located at the back or sides of the facility.

(3) Parking spaces shall be 9' wide, 18' long and have a 26' drive lane. Parking spaces shall be constructed at 90°. Vast expanses of asphalt shall be divided by islands incorporating native plan material.

(4) Concrete curb is required along driveways, around parking areas and around landscape islands in the parking lot. (Tack-on curbs are not allowed)

G. Engineering Standards

(5) Lane delineation shall be ceramic traffic buttons and reflectors.
(6) All joints between precast concrete and asphalt pavements shall be routed out and sealed.
(7) Control joints shall be provided in concrete pavement to minimize random cracks. "Too many" control joints is preferred to random cracks.
(8) Boring shall be used when possible to eliminate road cuts.
(9) Cuts in asphalt pavement shall be backfilled with a slurry cement backfill to prevent settlement. Asphalt patches should be a minimum of 25' and a maximum of 50'.
(10) Sidewalks shall be 5' wide along major streets and 4' wide along secondary and tertiary streets.
(11) Design the parking lot such that the total number of spaces is equal to the expected building population plus 10%.
(12) Handicap spaces shall be provided in accordance with the requirements of the American with Disabilities Act (ADA) and the Uniform Federal Accessibility Standards (UFAS).
(13) Site design should provide adequate separation between pedestrian and automobile traffic through sidewalks, curbs, landscaping, or other buffering elements.
(14) Specialized vehicles, such as delivery trucks, require separation from other vehicles.

l. Construction Considerations
(1) Detailed construction phasing and an order of work schedule shall be provided in contract documents for all major projects to reduce negative impact on nearby facilities and traffic.
(2) Provide remote monitoring, including utility meters, HVAC, generators, etc.
(3) Provide utility meters for all renovated and new facilities.

2. Structural

a. General Requirements
(1) The structural system and materials shall be suitable for permanent type facilities, capable of carrying the required loads, and compatible with fire protection requirements and architectural and functional concepts.
(2) Materials not already defined in these standards shall be selected for economy, general availability, desirability, resistance to fire and low maintenance costs over the design life of the facility.
(3) In selecting the type of structural system, the total cost of the facility shall be considered in conjunction with utilities, HVAC, lighting, finish materials and other architectural features.
(4) In choosing miscellaneous structural materials for this project, consideration shall be given to the site environment, climate, subsurface condi-

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tions, accessibility, wind velocity and seismic ratings, skill and experience of prospective contractors, the design life of the facility and maintenance cost over this period, availability of labor and materials and the feasibility of preassembling or precasting major structural elements.

(5) Asbestos and lead paint shall be tested for prior to any demolition.

(6) A preconstruction meeting is required prior to any asbestos or lead base paint work.

(7) All nonresidential buildings shall be metal framing.

(8) Soil treatment for termites shall be specified for any new building with wood framing.

b. Design Loads

(1) Comply with the latest edition of the Uniform Building Code.

(2) Consideration should be given to the use of bearing walls since past designs indicate their economic advantages.

(3) Any design using a column and beam system must be analyzed to determine the most economical system.

(4) Floor, ceiling and roof structures should be investigated to determine the most economical system consistent with the desired acoustical attenuation.

(5) Walls and partitions should be held to a minimum thickness to obtain maximum livable areas within the gross area limitation.

(6) The selection of walls and partition systems must take into consideration acoustical separation, fire protection, maintenance, structural requirements, and utility systems.

c. Design Notes

(1) Include general structural notes on drawings such as roof, floor, wind and seismic loads (wind:90, snow:30); material types and design stresses; unusual members sections properties; survey references; and other pertinent notes relating to conformance to codes or construction practices.

d. Compatibility with Finishes:

(1) Structural systems that require the use of cast in place concrete in conjunction with concrete masonry units should be carefully designed and detailed to present an attractive and acceptable appearance allowing for expansion/contraction and not allowing any leakage.

3. Plumbing/Mechanical

a. General

(1) The design of mechanical systems must take into consideration all factors that will ensure a quiet, comfortable and convenient environment for the occupants.

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(2) All mechanical equipment and systems must be selected on the basis of acoustical impact on the building occupants.

b. Reference Standards
   (1) Uniform Building Code;
   (2) Uniform Mechanical Code;
   (3) Uniform Plumbing Code;
   (4) NFPA Codes;
   (5) OSHA & AFOSHA regulations;
   (6) Americans with Disabilities Act
   (7) Uniform Federal Accessibility Standards;
   (8) Mil Handbook 1008 Fire Protection for Facilities;
   (9) ASHRAE standards.

c. Special System Criteria
   (1) Provide air conditioning and ventilation for proper operation of computers, machinery, etc.
   (2) Provide for the ventilation of mechanical rooms where refrigerant may be present.
   (3) Reference TRANE application engineering manual "Refrigeration Equipment Room Design" (REF-AM-2, Aug 1992).

d. Maintenance Consideration
   (1) Each piece of equipment must be installed so it can be properly maintained.
   (2) Clearances must be provided around all equipment to allow it to be serviced, removed, and replaced as required.
   (3) Plans and specifications should be examined to minimize large maintenance costs in the future.
   (4) Provide convenient access to all utilities, cleanouts, HVAC equipment and systems, and gas fittings, in the mechanical room, underground and in the building.
   (5) Additionally, any work performed in the overhead space must be done with the least disruptions to personnel utilizing the facility.
   (6) Provide direct vehicular access to mechanical rooms if possible.
   (7) Ensure adequate means of removing interior equipment.
   (8) Construction contract shall include training period for base maintenance personnel.
   (9) Training period shall range from four hours of on-site instruction for simple systems up to two days for complex systems.
   (10) Videotape of training sessions shall be included.

e. Energy Conservation Measures
   (1) Executive Order 12003, which requires a 30% energy reduction based on similar types of buildings in use in 1985, shall be followed.
   (2) Reference the following Engineering Technical Letter (ETL) for current design guidance: "U" values, ETL 83-9; Energy Budget Figures, ETL 87-4; Meters, ETL 87-5 (Draft rev. 93-XX);

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Equipment Efficiency, ETL 82-2; HVAC control, ETL 83-1.

(3) A computer energy system analysis, under ETL 84-2 (Draft rev. 93-XX) shall be required.

(4) Use a present value (discounting) technique using 10% mid-year values.

(5) Equipment economic life shall be equal to the building projected occupancy, but not more than a 25 year cost period.

(6) Designer shall conform to the Energy Budget Figures set forth in ETL 87-4 (Draft ref. 93-XX)

(7) submit proposed EBF's corresponding to the different facility operating hours.

f. Corrosion Control/Cathodic Protection

(1) Apply cathodic protection on all buried or submerged ferrous piping, tanks and related facilities.

(2) Under no circumstances will underground facilities be installed without cathodic protection.

(3) This requirement includes ferrous materials such as cast iron.

(4) All buried or submerged cast iron pipe joints will be bonded with number 2 AWG insulated wire.

(5) Thermit wire connections must be coated.

(6) All cathodic protection design must be performed by an engineer accredited by the National Association for Corrosion Engineers.

(7) All cathodic protection design must be based upon specific field tests made at the construction site. Tests will include soil resitivity and water conductivity.

(8) Cathodic protection systems shall be sacrificial anode and impressed systems and shall comply with corrosion protection criteria outlined in NACE Standard RP-01-69-9 (revised), ETL 87-3 and AFM 88-45.

(9) All dissimilar metals shall be separated by dielectric union.

g. Potable Water Source

(1) Coordinate with the Engineering and Site Development Sections at Whiteman AFB for location of water mains and the operating pressure ranges in the area of connection.

h. Piping Materials and Special Outlets System - Material

(1) Water (underground)-PVC type C-900

(2) Water (above ground, inside)- Hard copper Type l

(3) Sanitary Drain, Waste - (building, 3 stories and less) - ATSS - Vent, ABS - Vent Sanitary Sewer

(4) Sanitary Drain, Waste - (buildings taller than 3 stories) - cast iron

(5) Storm Drain- RCP or CMP

(6) Chilled Water- Schedule 40 galvanized steel or Schedule 80 - PVC or hard copper - Type L

(7) Heating Hot Water- Schedule 40 black steel or hard copper - Type L

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(8) Natural Gas (underground)- Polyethylene with tracer wire
(9)Natural Gas (above ground)- black iron
(10)Provide dielectric union when connecting dissimilar metals
(11)Provide lead free plumbing components
(12)Provide identification labels for pipes in the Mechanical Rooms

i. Piping System
(1) Provide valves to isolate portions of building to avoid shutdown of entire building.
(2) Drain, waste and vent piping as required by Uniform Plumbing Code for sanitary sewer system from each new facility.
(3) Fire protection systems are required for each facility per NFPA codes.

j. Piping System
(1) Energy conservation washerless fixtures shall be all metal construction, no chrome-plated plastic. All techniques shall be considered, including 1 gpm flow restrictors for faucets, 3 gpm low-flow shower heads, single control mixing type faucets, low-volume flush water closets, and self-closing faucet valves. Showers shall have valves with pressure balance feature. Utilize freezeless wall hydrant. Provide interior wall access (self-draining) with hose attached. Wall mounted drinking fountains are preferred.
2. In buildings normally occupied by more than 15 persons, provide separate toilet rooms for each sex; position them together and use a common wall for plumbing chase. In buildings occupied by 1-15 persons, a single toilet to serve both sexes may be provided. Furnish one water closet, one lavatory, and a room door that can be locked from the inside.
3. All applications of plumbing fixtures shall be considered for handicapped usage as directed by Air Force Guidelines.

(4) Plumbing fixture types
(a) *Water closets (Institutional)* - Flushometer valve, siphon-jet, elongated bowl, top supply spud, 3" trap way, floor or wall mounted, 1.6 gpm/flush. Seat: plastic, elongated, open front.
(b) *Water closets (Handicapped, Institutional)* - Top rim of bowl shall be 18 inches above the floor. (All others same as #1)
(c) *Water closet (Residential)* - Siphon-jet, elongated bowl, flush tank, 3" trap way, floor mounted, 1.6 gpm/flush. Seat: plastic, elongated, open front with seat cover
(d) *Lavatories (Institutional)* - Enameled cast iron or vitreous china, counter top. Faucet: as required.
(e) *Wheelchair sinks (Residential)* - Vitreous china.

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(f) *Urinal (Institutional)* - Wall hung. Siphon-jet or washout. 1 gpm/ flush.

(g) *Kitchen sinks (Residential, Institutional)* - Single or double bowl. Ledge back with holes for faucet and spout. Enameled cast iron, porcelain enameled steel or stainless steel. Faucet - as required.

(h) *Service sinks (Institutional)* - Enameled cast iron. Trap standard, wall mounted or floor mounted. Faucet - as required.

(i) *Food service sinks (Institutional)* - Stainless steel with drain board. Faucet - as required.

(j) *Water coolers (Institutional)* - Self contained. Exposed surfaces shall be stainless steel. Wall mounted surface. Wall mounted semi-recessed. Wall mounted recessed. Handicapped. Free standing.

(k) *Showers (Institutional, Residential)* - Wall mounted for stall or bath tub. Valves as required.

(l) *Bathtubs (Institutional, Residential)* - Straight front recessed. Fiberglass.

k. HVAC

(1) General

(a) Air conditioning units shall be Trane or Carrier; designed for an ambient temperature of 115°F.

(b) Provide VAV systems in all new projects and during major renovations where entire mechanical system is being removed.

(c) Provide Energy Management Control System for units greater than 10 tons.

(d) Provide water cooled chillers for units greater than 40 tons.

(e) Roof mounted mechanical equipment shall not be allowed for any new sloped roof facility. Where permitted on flat roofs, equipment should be screened with parapet walls or other devices.

(f) Provide gas heating where gas is available. This needs to be confirmed for each project. Do not use heat pumps if gas is available.

(g) Provide screw type compressors for chillers greater than 40 tons.

(h) Provide economizer when appropriate.

(i) Provide water treatment for all water systems, heating or cooling. Large systems should have loops installed as part of the system.

(j) Provide washable pleated air filters.

(k) Provide phase protection for all HVAC equipment (i.e. pumps, chillers, air handling units)

(l) Refrigerant shall be HCFC type only.

(m) Provide recommended manufacturing clearance around boilers,

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chillers and air handlers for maintenance purposes.

(2) Controls
   (a) Provide DDC or electronic controls. Pneumatic controls will not be accepted.
   (b) DDC shall have direct communication with base existing EMCS system.
   (c) Provide a fully labeled control schematic which details all set points, throttling ranges, actions, spances, proportional bands, and any other adjustment.
   (d) Provide a fully labeled elementary diagram (ladder diagram).
   (e) Provide a sequence of control on the drawings cross-referenced to the control schematic and elementary diagram.
   (f) Provide a generic, functional description of each control component shown on the drawings.
   (g) Provide for remote monitoring, including utility meters, HVAC, generators, etc. Use remote sensors so that controllers can be centrally located in the mechanical room.
   (h) Provide logical grouping of controllers, adapters, relays and power supplies in an easily accessible controls cabinet mounted away from vibrating machinery.
   (i) Provide electronic system terminal strips cross-referenced to the control schematic to facilitate troubleshooting and calibration. Maximize "self-help" software as well.
   (j) Provide control schematic, elementary diagram, control sequence, description of components, control panel details, legends and schedules in the design.
   (k) All possible "clog" points shall have differential pressure checks on them.
   (l) Systems shall be fully functional on their own case in case connection to main EMCS is lost.

l. Heating
   (1) Designer will research and choose most appropriate heating system for the facility
   (2) Use ASHRAE Standards for calculating heating loads.
   (3) The use of cast iron boilers is discouraged. Provide boiler water testing sample points on all hot water systems. Provide chemical feeding systems on all hot water heating systems. Provide automatic pilotless ignition systems on all gas fired equipment. Install thermostats on heating supply and return lines. Install pressure gauges with valves on suction and discharge lines to all pumps. Install gas pressure gauges

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with valves on all gas trains on boilers.

(4) Access to equipment for servicing is the single most important item for designing of new systems. Coils, filters, valves, pumps or tube removal or servicing is to be considered when designing mechanical systems.

(5) Sloped roofs shall not have any equipment located on them. All equipment located closer than 10'-0" from the edge of a flat roof shall have a safety railing.

(6) Equipment located on the ground shall be hidden from view (See Landscape Architectural Standards.)

(7) Where humidification is required, steam humidifiers shall be used.

(8) The fuels available for use are gas for furnaces and boilers, electric for heat pumps.

(9) The equipment selection should be based on the system selected to provide the most energy efficient combination.

(10) Equipment types to be used

(a) Type-1
HVAC boiler shall be steel tube. Domestic hot water boiler shall be copper tube.

(b) Type-2
Heat exchanges shall be shell and tube type or plate type.

(c) Type-3
Heat pumps shall be air-to-air or water-to-air.

(d) Type-4
Circulating pumps shall be centrifugal base mounted, inline horizontal or vertical.

(e) Type-5
Unit heaters shall be horizontal or vertical.

(f) Type-6
Air handling units shall be blow thru or draw thru packaged type.

(g) Type-7
Fan coil units shall be horizontal, vertical or thru-the-wall type.

(h) Type-8
Radiant heaters shall be gas fired. combination.

(11) Distribution Piping and/or Ducting

(a) Piping and ducting shall be IAW the Uniform Mechanical Code, SMACNA, and applicable ASHRAE design criteria. Flexible duct runs should be limited to 6' lengths.

(12) Insulation

(a) All piping installed to serve the building and within the building shall be thermally insulated IAW Table 5.1, ASHRAE Standard 90A-1980, Energy Conservation.

(b) New Building Design.

(c) No asbestos-containing materials will be used for insulation.

(13) Heating Plant and Systems

(a) Water Softeners/Water Treatment Equipment

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(i) Make sure water softeners are properly sized to allow soft water to be introduced into the plant at all times, including emergency shutdown.

(ii) Provide soft/conditioned water for all large boiler systems.

(iii) Install adequate water treatment equipment on boilers/plant. Consideration should be given to pulse type boilers.

m. Ventilation/Air Conditioning/Refrigeration System

(1) The use of cooling towers should be avoided. Evaporative coolers shall be installed at the 2-3' level, not on the roof. All condensing units shall be air cooled. Select air cooled condensers based on 110°F ambient. Avoid the use of centrifugal chillers. A central mechanical system shall normally be provided unless specific engineering cost analysis indicate sub systems to be more economical. Locate equipment designed to operate outside behind architectural screening. Avoid locating outside equipment near the main entry of buildings.

(2) A life cycle cost analysis shall be done for air cooled and/or water cooled chillers. Larger air conditioning units work more efficiently with cooling towers. Use of a screw type compressor chiller is more efficient. Centrifugal chillers are long lasting. Based on the above, a life cycle cost analysis shall be done to compare initial costs, long-term costs and energy efficiency.

(3) Access to equipment for servicing is the single most important item for designing of new systems. Removal or servicing of coils, filters, valves, pumps, or tube is to be considered when designing mechanical systems.

(4) Sloped roofs shall not have any equipment located on them. All equipment located closer than 10'-0" from the edge of a flat roof shall have a safety railing.

(5) Equipment located on the ground shall be hidden from view. (See Landscape Architectural Standards)

(6) *Fuel:* Mechanical refrigeration shall be fueled by electricity.

(7) *Equipment:* Shall be suitable for the application.

(a) Type-1
Chillers shall be packaged air cooled type.

(b) Type-2
Heat pumps shall be air-to-air, water-to-air, or geothermal closed loop.

(c) Type-3
Circulating pumps shall be centrifugal base mounted, inline horizontal, or vertical.

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(d) Type-4
Air handling units shall be flow thru or draw thru packaged type.
(e) Type-5
Fan coil units shall be horizontal, vertical or thru-the-wall type.

(8) Office areas, dining rooms, and personnel living spaces shall have air conditioning.

(9) Air conditioning system shall be chosen on the basis of economy, efficiency, and ease of maintenance.

(10) When calculating cooling loads, use ASHRAE standards.

(11) The peak or maximum cooling load for selecting the room side cooling equipment will consist of:
(a) exterior heat gain through building construction;
(b) personnel occupancy;
(c) electrical lighting not to exceed one watt per square foot for rooms and 1½ watts per square foot for office and shop space;
(d) design occupancy ventilation air total heat (outside air design minimum room design condition);
(e) 10% safety factor.

(12) Window shading devices on the exterior and interior will be investigated in an effort to reduce the room solar heat energy.

(13) Minimum room supply air rate or fan-coil capacity will be 0.80 cfm/sq. ft.

(14) The building peak or block cooling load for central refrigeration capacity will be determined on the identical parameters outlined above with the following exceptions:
(a) Personnel occupancy will be 40% total occupancy;
(b) No interior electrical lighting;
(c) 10% minimum safety factor to include motor hp and heat gain to coolant distribution system.

(15) The chilled water supply temperature will normally vary between 40 and 50°F, which shall be determined from the designer's analysis of the optimum balance for the cooling unit, water distribution, and water chiller.

(16) Normal air infiltration should be evaluated in an effort to meet the requirement for range hood exhaust.

(17) The building peak heat gain analysis will include the personnel ventilation rate or continuous toilet exhaust where the air flows through the occupied space.

(18) Provision will be made for removal of equipment for maintenance. Tube bundles will have provision of easy removal for maintenance; i.e., A-frame or monorails structurally adequate to support the loads and provide proper distance between system components and walls to ensure ability to clean, repair, or replace tube bundles.

(19) Install bypasses on all strainers so that they may be cleaned without plant shutdown.

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(20) Distribution Piping and/or Ducting: same as for heating.
(21) Design conditions shall be chosen from ASHRAE.
(22) Ventilation
  (a) Ventilation shall be supplied in accordance with ASHRAE.
(23) Pipelines/Utilities
  (a) Access Requirements:
    (i) Sufficient clearance shall be provided for any conceivable service equipment which may be installed or temporarily operated in the future facility.
(24) Road Crossing Criteria
  (a) All crossings must be made by boring or jacking unless a road cut is expressly approved.
  (b) On approved road cuts, provide spare pipe sleeve for future use.
(25) Separation Requirements
  (a) Design shall meet IAW the Uniform Plumbing Code.
(26) Maximum/Minimum Depths of Cover
  (a) Eighteen inches minimum for all services at the 5' building line.
  (b) 30" average depth is acceptable on piped utilities.
  (c) Proper engineering design may allow less depth.

n. Fire Protection
(1) Design Development
  (a) Provide description of fire alarm/suppression system to be utilized, fire water flow rates, connection point, and catalog cuts for proposed equipment.
  (b) Provide preliminary design, water flow pipe calculations (if sprinkler system is proposed), cost estimates and specifications.
(2) Response Distance/Time (Mobile Fire Apparatus)
  (a) Information regarding the base water distribution is available from the Base Civil Engineer.
(3) Existing Fire Protection System
  (a) Provide a radio fire alarm transceiver compatible with base fire alarm system.
  (b) Research pressure and flow rate for hydrants in the building area.
(4) Compliance with Life Safety Code (NFPA Standard 101)
  (a) Design for structural, fire protection and occupancy features, including means of egress, roof ventilation, emergency lighting and illumination, and building service (heating, ventilation, and air conditioning systems) shall be IAW the latest edition of NFPA 101.
  (b) Provide calculations and diagrams showing compliance.
  (c) Ceiling light in corridors to be used as emergency lighting units with battery backup lights to be near each exit. Exit lights shall have a battery backup.
(5) Fire Detection System Requirements

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(a) Manual pull stations shall be provided throughout the facility, typically including one pull station at every personnel exit door.
(b) Actuation of a pull station shall sound local alarms and transmit an alarm to the Base Fire Department via the building central control panel.
(c) Actuation of a pull station of fire detection system shall indicate both audible and visual signals.
(d) This system shall be designed IAW NFPA Standard 72.
(e) Smoke/Heat Detectors: Install 135°F fixed temp heat detectors or photoelectric smoke detectors in all areas except dormitory sleeping areas. In dormitory and sleeping areas, install combination smoke/heat detectors.
(f) Only the heat detectors component shall be connected to the fire detection systems which transmits a coded signal to a central alarm location.
(g) Smoke detectors in sleeping areas shall only activate an audible room alarm. Battery operated units are not permitted.
(h) Areas protected by automatic fire detection systems will include occupied and unoccupied spaces and attics.
(i) Mechanical rooms, laundry room and attic must be 190°F waterproof where exposed to moisture.
(j) Design shall comply with applicable NFPA Standards.
(k) Systems should contain a fan shutdown to turn off all air handlers, exhaust fans, and ventilation motors upon activation. Follow UNC and NFPA requirements.

(6) Fire Sprinkler Requirements
(a) Provide a fire sprinkler system IAW NFPA 13 for Automatic Systems.

(7) Special Extinguishing Systems Requirements
(a) Provide recessed or semi-recessed cabinets for portable fire extinguisher. Distribution shall be IAW NFPA Standard 10.

(8) Provisions
(a) Fire protection provisions shall be summarized and submitted as a separate analysis.

(9) Testing
(a) Contracts and specifications shall include requirements for all testing and initial charging of systems as part of the construction in accordance with NFPA 13 to produce a complete and usable system.

(10) Cooking Area Requirements
(a) Hood and dust systems for cooking equipment which produces smoke or grease-laden vapors shall comply with NFPA 96, "Installation of Equipment for Removal

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of Smoke and Grease-laden Vapors from Commercial Cooking Equipment."

(b) Activation of the hood and duct fire suppression systems shall automatically de-energize the unit.

(c) Activation of the hood and duct fire suppression systems shall sound a general building alarm and transmit a signal to the fire department.

(11) Handicapped Requirements

(a) Designs shall comply with the Americans with Disabilities Act (ADA) and the Uniform Federal Accessibility Standards (UFAS). The most stringent requirements shall apply.

4. Electrical

Note: These standards utilize brand names for certain items so that the base can standardize and minimize spare parts.

a. General

(1) The design of under ground distribution systems shall be based on the calculated demand with sufficient electrical capacity for expansion if allowed or if within the budget.

(2) The materials as indicated above shall be plastic conduit encased in concrete. Allowable plastic conduits include PVC, fiberglass, or similar nonmetallic electrical duct.

b. High Voltage

(1) Padmounted Transformers

(a) No dry type transformers on high voltage.

(b) All oil filled transformers must have a certified oil sample on record with the BCE before installation.

(c) Rebuilt transformers are allowed as they are less expensive and can be delivered more quickly.

(d) Specify Copper windings OA/FA Deg C rise, 95KV BIL, with surge arrestors. Aluminum is not allowed.

(2) Padmounted Switches

(a) Specify "RTE" RVAC's for inline switching. Joslyns will not be allowed.

(b) Specify "RTE" MOST Oil switches for taps.

(c) All taps off of a high voltage line shall be switched and fused.

(3) Fused Cutouts

(a) Specify A-B Chance or S & C. All fused cutouts will be porcelain. No fiber types permitted.

(b) Always require an Aluma-Form or equal aluminum bracket installation for risers and fused cutouts.

(4) Surge Arrestors

(a) Specify General Electric or Ohio Brass non porcelain type, 9KV.

(5) Underground Cable

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(a) Specify Copper, 15KV insulation, 95 KV, 133% BIL, XLP or EPR insulation.

(6) Concentric Neutral

(a) Neutral to be stranded not banded.

(7) Terminations

(a) Specify 3M-5601 shrink on Quick Term or equal.

(8) Services

(a) By regulation all building services will be metered.

c. Low Voltage

(1) Panelboards

(a) Specify breakers, no fuses.

(b) Square D or GE preferable.

(2) Contactors

(a) Specify magnetic contactors not manual for a load over ½ hp.

(b) Lighting contactor with photocell, locate photocell as high as possible.

(c) Motor Starters - always specify thermal protection. Specify with a Hand-Off-Auto switch so the shops can bypass if necessary.

(3) Wire

(a) All wire larger than #10's shall be stranded copper

(b) Indoor and general wiring specify THHN insulation.

(c) Outdoor underground wire specify either XHHW or XLP.

(4) Dry Type Transformers

(a) Specify Copper windings, 115 Deg C rise over a 40 Deg C ambient.

(5) Outdoor Lighting

(a) HPS required by regulation, 250W if possible for parking lights, security lighting, roadway lighting.

(6) Fluorescent

(a) Indoor office lighting shall be fluorescent except for very specific decorative situations. All lamps to be Type T-8 for new projects with energy efficient ballast.

(b) Fluorescent fixtures by regulation shall have solid state ballast. Lamps shall be 35W.

(c) Diffusers shall be highly reflective for maximum fixture efficiency.

(d) Industrial lighting shall be HPS except for instances where accurate color rendition is a requirement. Then specify metal halide (i.e. inside airplane hangars).

(7) All communication connections will be in panel boxes. Do not use plywood on the walls. There shall be no exposed wires.

d. Interior Lighting

(1) Provide wire guards for all open fluorescent lamps. Utilize energy saver 35 watt T-8 fluorescent lamps and electronic ballasts in administrative and similar areas. Use metal halide lights in bay areas. Provide seismic protection for all fixtures, especially ceiling grid mounted fluorescent fixtures. Provide Certified Ballast Manufacturer (CBM) listed

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ballasts. All ballasts shall have 0.90 power factor or greater.

(2) Wiring Devices: Provide new devices and plates whenever an area is renovated. All devices shall be recessed except in mechanical rooms and utility areas. Provide devices rated at 20 amps where heavy use or electrical load dictates the need for 20 amp devices. All wiring shall be copper. No aluminum allowed.

(3) Automatic controllers: Provide battery backup for lawn sprinkler system controllers and automatic setback thermostats.

(4) Overcurrent Protective Devices: The minimum sized overcurrent device for branch circuits is 20 amps. Ensure proper coordination and withstand ratings for all overcurrent protection devices. Demonstrate coordination with first upstream existing protective device. Replace old circuit breakers with new when remodeling facilities. If replacement breakers are unavailable, consider replacement of entire panel board. Main fusing is acceptable for limiting short circuit currents; however, place a box with one full set of spare fuses adjacent to main panel.

(5) Provide plastic panel board and disconnect labels. Labels shall be laminated (black with white core) engraved with ¼"high letters. Attach to front exterior of enclosures. Labels shall match plan designations. Provide non-ferrous phase and circuit identification labels in all enclosures for feeder circuit conductors. Provide underground marker tapes for all underground conductors. If underground conductors are not in metallic conduit, provide marker tape with foiled backing to facilitate detection.

(6) Add power factor (p.f.) capacitors to induction motors (10 HP or larger) to correct p.f. to 0.90 (+ .05, - .00). Switch p.f. capacitors in with the motor. Size capacitor IAW IEEE 141, NEMA MG2 and motor manufacturer recommendations.

(7) Power requirements for building shall be 208/120 except 480/277 may be used depending upon building function.

(8) Balance loads on phases within 10% at all panel boards. Conduit fault calculations to ensure proper withstand ratings for all protective devices. Ensure coordination for all protection devices, conductors, enclosures and equipment.

(9) Conduit run in concrete shall be PVC unless steel conduit is needed for a specific reason, i.e. to limit fault currents. Underground primary voltage feeders shall be in concrete encased conduit. All penetrations of fire resistance rated walls shall be fire stopped IAW NEC Article 300-21. Highlight compliance with NEC

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Articles 300-5 (g) and 300-7 (1) regarding moisture seals.

(10) Aluminum conductors smaller than No. 4 AWG may not be used. In mission critical facilities, housing, dormitories, and transient quarters, aluminum conductors may only be used for service entrances. The smallest branch circuit conductors acceptable are No. 12 AWG. Conductors No. 6 AWG and larger shall have heat resistant insulation.

(11) All new utility lines shall be run in underground conduit. Provide spare conduits from transformer to building.

(12) Meters shall be generally located in rear of building or near service entrance.

(13) All new building shall have lightning protection designed into the project.

e. Security Systems

(1) In order to maintain coordinated system growth, security panels shall be compatible with the base system.

(2) Install a ¾" conduit from the security panel to the building's main telephone backboard (home run panel). Install a 24 AWG for wire Cat 5 telephone cable in this conduit.

(3) Security panels will have a minimum of sixteen programmable zones. Door contacts will be grouped together with a maximum of five door contacts per zone. Motion detectors will be grouped together with a maximum of five motion detectors per zone. Under the floor or above the ceiling motion detectors or other sensors will be zoned separately. Duress alarm sensors and duct detectors will also be zoned separately. Sensors on each zone are to be wired in series.

(4) Install a separate power supply in a junction box adjacent to the security panel to power all motion detectors or other non passive field security sensors. Install conduit between the power supply junction box and the security panel. Provide 115V AC to an AC handy box inside the power supply security panel. Install a 115V AC receptacle with an ON/OFF switch in the handy box. This receptacle will be used to plug in the stepdown transformer that powers the security panel.

(5) Magnetic card readers with keypads shall be installed to permit entry into secure areas. The keypad shall be mounted on the outside of the primary entrance into the classified area. If the keypad is mounted on an external wall exposed to the elements, a NEMA enclosure with hinged cover will be installed to protect the card reader. The enclosure will be of sufficient size to allow the user to swipe the card through the reader.

G. Engineering Standards

f. Telecommunications
   (1) New construction and remodeling projects should make provisions for conduit, outlets, lockable enclosures, power and building entrance. Locate telecommunication rooms close by electrical equipment rooms.
   (2) Telephone Systems: Provide general purpose electrical box. Provide 120V duplex receptacle adjacent to box with a #6 AWG bare copper wire from backboard to grounding bar in panel board. Provide conduit to exterior for telephone service drop - prefer below ground access.
   (3) Pay Phones: Ensure that electrical power is provided next to all pay phones.
   (4) Wiring and Conduit (General): Provide prewired outlets with covers for phones and computer. All cable and phone lines prewired back to central electrical space in the building. Provide empty underground conduit to exterior manhole for both cable and phone.
   (5) Electrical Room: All electrical rooms shall have environmentally controlled spaces.
   (6) Communication wiring shall be located in cable trays above ceilings.
   (7) All new buildings shall be pre-wired for telecommunication in conduit which includes fire alarm, telephone and EMCS Systems.

5. Environmental Engineering

   (1) National Environmental Policy Act
      (a) The goal of the National Environmental Policy Act (NEPA) is to incorporate environmental values into Federal government planning as a practical contribution to informed decision making. The Law requires using a systematic interdisciplinary approach to planning, and ensuring appropriate involvement of internal, interagency, institutional, and public stakeholders early in the planning process to integrate pertinent analysis, values and perspectives and expose and evaluate points of controversy.
      (b) The A/E shall take part in the process for analyzing the National Environmental Policy Act.
   (2) Pest Management
      (a) Minimize bird nesting opportunities.
      (b) Provide bat proof design.
      (c) Provide cockroach preventive design.
      (d) Provide rodent preventive design.
      (e) Provide skunk and feral cat proofing design.
   (3) Bird Air Strike Hazard (BASH)
      (a) Provide designs of building and landscape consistent with BASH program goals.

G. *Engineering Standards*

(b) Avoid designing landscapes which support animals that could provide a hazard to base operations.

6. Maintenance Engineering

(1) All surfaces should be low maintenance.
(2) Provide easier access for less intrusive maintenance of utilities.
(3) Minimize obstacles in parking lots and provide curb design for easy snow plow operations.
(4) Provide landscape trees, bushes and plants consistent with low water, high wind environment.
(5) Layout of landscaping should consider ease of mowing.
(6) Landscaping should be natural, consistent with the prairie and its ecological habitat.

APPENDIX 1

Plant List

For detailed plant list, refer to the Whiteman Air Force Base Landscape Development Plan.

APPENDIX 2

ACC Design Standards

1. Base Design Policy

The special character of defense installations dictates compatibility over personal style. The limited size and function of Air Combat Command (ACC) bases cannot accept the diverse opinions of the many design professionals without becoming cluttered and unsettled. In this context, "good design" is defined as design that contributes to the overall harmony of the base rather than design that attracts individual attention. Good examples of where ACC goals should lead are college campuses and corporate office parks. Because we do not want monotony, every building does not have to be the same, but some repetitive common architectural element or theme should tie all buildings together. Responsible design will achieve this goal.

Use a simple approach to locate facilities. Facilities having similar function should be located in the same vicinity on uncongested sites, but do not permit parking to dominate. Use indigenous, low maintenance materials. Relate building forms to each other and use low maintenance landscape material. Do not paint new buildings. Use materials that do not require painting during their life cycle. Use neutral colors such as beige and brown.

The Architectural Policy has a set of goals that guide the development of the policy.

- *Site Conditions:* Provide site conditions and building forms appropriate to any new, future or existing buildings.
- *Low Maintenance:* Use permanent low maintenance exteriors that are compatible with ACC bases and their natural and man-made environments.
- *Environmental:* Design facilities in ways to enhance environmental quality and minimize consumption of natural resources.
- *Layouts:* Provide functional layouts that completely satisfy users needs.
- *Costs:* Reduce life cycle costs.
- *Labor:* Reduce labor intensive maintenance procedures.
- *Approval:* Obtain user approval of design concept layout prior to predesign conferences in order to prevent costly changes during final design, contracting and construction. This is normally done through a Customer Concept Document prior to preparation of programming documents.

2. Site Design Policy

Site selection and design are important to achieve compatibility with the Base Comprehensive Plan (BCP). The following guidelines for site location, site size, parking and landscaping will help contribute to this compatibility.

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2a. Location

Situate new buildings within compatible functional groups as determined by base master plan.

- *Congestion:* Do not create congestion. Functional separation is better than congesting a functional neighborhood.
- *Complexes:* Site buildings supporting a common function such as civil engineering complexes in order to share a common infrastructure of roads, parking, utilities and security. These tight clusters should read as one idea with similar details and materials that link them aesthetically as well as functionally. Provide enough space around a complex for expansion. Assume 10% expansion whenever other supporting data is not available.
- *Traffic:* When existing traffic patterns are changed by new construction proposals, provide adequate traffic alternatives to coincide with the construction of the new project. Locate buildings so that you can walk between buildings in a functional group. Only encourage driving when walking cannot be accommodated.

2b. Site

Avoid small sites that cause problems for neighboring buildings and unnecessarily increase costs.

- *Site Influence:* Do not use sites that force building functions into basements, third floors or uneconomical shapes as curves, diagonals or long rectangles.
- *Open area:* Use sites that permit open landscape space around buildings to separate the building from required pavement. Prevent an overcrowded appearance.
- *Existing site contours:* After positive drainage away from buildings is developed, use existing or natural grades and contours to avoid excessive cut and fill operations.
- *Setbacks:* Sites need to allow minimum setbacks from other structures such as buildings, roads, and parking. Minimum setbacks are 25' for the front and rear, and 10' for the side.

2c. Parking

Use size, location and screening to prevent parking from becoming a dominate feature. Do not locate parking directly in front of a building or entrance. Do not locate parking between the main viewing street and the building.

- *Buildings:* Locate parking behind buildings; when a building is located between a street and a parking lot the building appearance is improved and the parking is screened with minimum cost. Consider building shape and relationship to other buildings to provide as much screening as possible. Ensure the

principle or main view of the building presents a pleasing and uncluttered appearance. Parking arrangement is a major factor in providing an orderly appearance.

- *Size:* Use separate smaller parking lots of 50 cars or less rather than one large lot of 200.
- Reduce apparent size: Where large parking lots exist or are required by functional layout, landscape approximately 10% of the area within the lot.
- *Walking distance:* Design parking lots to limit walking distance. Use a maximum of 200 feet for most buildings, for transient and bachelor housing limit luggage carrying and walking distance to 100 feet.
- *Curbs:* Provide curbs around parking, access roads and streets.
- *Drainage:* Design paved areas to minimize drainage into natural water courses.

3. Architectural Design Policy

Exterior treatment requires careful management to achieve the desired overall compatibility. Each base has to define a context and direction based on existing built and natural environment. Use of the following guidelines will achieve the desired ACC standard.

3a. Form

Use simple plans and building forms as well as conventional sloping roofs. Eave heights may vary as required by interior functional relationships, but do not use more than one pitch angle on a building. Do not combine two kinds of roof such as flat and sloping roofs on the same building unless it is clearly justified by the influence of adjacent architecture, building function or layout. Minimize corners, offsets and curves on horizontal and vertical surfaces. Use only as clearly justified by the adjacent architecture, building function or layout.

- *New Versus Old:* Imitate and improve on existing base building forms to provide harmony between new and old; the new emphasis on sloping roofs makes this more difficult than in the past. When new sloping roofed buildings are sited among existing flat profiled building, steps must be taken to develop some secondary flat forms to relate the new to the old.
- *Height:* Except for dormitories, which are limited to three stories, limit buildings to two stories above ground. Do not use basements.
- *Mechanical:* Do not let mechanical systems become form-givers. Locate mechanical units to the rear or side of buildings. Design these features to blend in and to integrate with the building architecture in such a way that they are not prominent or detectable. Match ma-

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terials for mechanical enclosures to the building they serve, i.e., masonry with masonry. Use roof mounted equipment only when absolutely necessary. If required, match the equipment enclosure to the roof or wall material, as much as possible. Equipment wells are also acceptable. As a minimum, screen any equipment at ground level with landscape. When screening mechanical equipment, ensure adequate clearance as recommended by the equipment manufacturer is provided to allow for proper air circulation.

3b. Walls

Minimize use of curves, cants or angles other than 90 degree corners. Use only as clearly justified by the adjacent architecture, building function or layout.

- *Material:* Use low maintenance durable materials that are integrally colored and textured such as brick, split-face concrete masonry units (CMU), split ribbed CMU, prominently exposed aggregate on precast concrete or other substrates, and integrally colored concrete that is textured by use of form liners. Brushed, honed or sandblasted concrete is not acceptable.

  Use of bricks, blocks or grout containing fly ash or other by-products is preferred. Use concrete containing fly ash or other recycled materials. Autoclaved cellular cement should be used where appropriate.
- *Doors and Windows:* Use energy-efficient doors, windows, and door/window frames. Consider if doors or windows from previous facility modifications can be reused/recycled. Use of doors, windows and door/window framing containing recycled materials is preferred.
- *Painting:* Do not paint new buildings and do not use materials that are typically restored by painting such as stucco, metal fascia and various kinds of siding. Secondary doors may be painted as described in the next paragraph. On metal buildings, select a factory prefinished material.
- *Anodized Aluminum:* Color anodized aluminum in neutral colors (suggest dark to light bronze) is recommended for exterior metals normally associated with walls such as fascia, gutters, downspouts, windows, and building entrances. Fire exit doors and other secondary doors and frames may be painted for economy. When painting secondary doors and fire exits, they may be painted to match the primary color anodized entrances or painted to match adjacent walls; this is a designer option. The objective is to produce a simple appearance which is uncluttered by many colored shapes.

3c. Roofs

Use sloped roofs greater than 3:12 on ACC buildings with corresponding roof coverings such as factory finished standing seam metal or shingle roofs. These low maintenance alternatives are required because of the poor maintenance history of flat multi-ply built-up roofs. Generally use a symmetrical double slope roof type. For improved maintenance, do not combine a multi-ply flat roof with exposed metal, shingles, etc. Make all of the building parts compatible with each other. Roofing made from recycled materials is preferred.

- *Alternatives:* Do not use low slope roofing if 3:12 or steeper pitch is feasible. Lower slopes and other materials may occasionally be required by building form and size (extremely large buildings such as supply facilities or commissaries). Slopes as low as 1:12 are generally accepted for metal roofs (consult with manufacturers for particulars). When a multi-ply built-up roof is used, slope the roof at ¼:12 minimum. The slope is to be accomplished with structural members for new built up roofs, not by tapering the insulation.
- *Drainage:* Provide continuous roof slope to the perimeter of the building. Do not design interior valleys or depressions that will form ponds if a roof drain becomes obstructed. Ensure overflow scuppers are provided in accordance with applicable codes for parapets.
- *Skylights and Clerestories:* These features may be used where strong functional and economic justification dictates; fully document economic justification and submit with proposed design to include life cycle cost of special ballast and control devices. Be sure to consider heat load and occupant comfort as part of the proposed design. General area lighting for warehouses is not considered strong enough functional justification to compensate for the generally high maintenance associated with large numbers of skylights on a flat roof.
- *Metal fascia:* Do not use wide metal fascias with flat roofed buildings. If a band is desired around the top of a building, provide it with masonry detailing such as projections, soldier courses, or stack bonds. Masonry detailing provides a more durable maintenance free fascia that does not require painting.

3d. Additions

When building additions are proposed, careful coordination is required to determine if the addition should match the old building or if the old building should be changed and brought up to ACC standards at the same time as the addition.

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- *Small Addition:* When less than 25% of the existing building's floor area, design additions to match the original construction.
- *Large Additions:* When additions exceed 25% of the original building area, the addition and the original construction are required to comply with ACC standards. For example, a flat roofed building of 10,000 square feet needs an addition of 3,000 square feet. In this example 3,000 is more than 25%. The addition would have a sloped roof, and the original building would be renovated to have a sloped roof. If the original building were plain CMU, then a new exterior wall finish of textured CMU would be considered either in the form of a complete veneer or as a minimum, use textured CMU at important visual points such as entrances, planters, sign, corner protection, etc.
- *Compatibility:* In either case (large or small), when additions are complete, they should be architecturally compatible rather than obvious add-ons.

3e. Metal Buildings

- *Location:* Use metal buildings where they are compatible with adjacent structures. Do not use metal buildings in highly visible locations unless they are surrounded by other metal buildings. Metal buildings not used in highly visible locations should be well screened with walls or vegetation. When designing a new metal building, consider using a textured, integrally colored masonry base for durability.
- *Finish:* Use factory applied finishes with more than 15-year warranties.
- *Submit site justification:* At the programming stage, submit siting criteria. Indicate adjacent building construction. If the building is isolated, describe how visible it is from major, minor, or service roads. State reason for selection of metal over masonry in addition to cost consideration.
- *Protective masonry:* Provide protection on the exterior of buildings where impact to metal panels is probable. For example, integrally colored and textured masonry should be used at entrances, at corners, exterior wainscot to four feet high where vehicles are parked next to buildings, around forklift operations, and at loading docks.

3f. Colors

Use neutral anodized colors such as brown tone or gray tone neutral. Judgment has to be exercised in selection of colors for isolated miscellaneous features such as exit doors, downspouts, etc. In some cases, a building benefits from having isolated features painted to match adjacent light colored walls. This is very important on older buildings with many windows and doors.

Painting trim a contrasting color can produce a cluttered appearance.

- *Wall Materials:* Select neutral colors such as beige and brown.
- *Exterior metals:* Use neutral anodized colors such as bronze. When aluminum, hollow metal, and wood are mixed on one building, hollow metal and wood may be painted to match the bronze aluminum color or adjacent walls. In any case, do not use a third color that does not match the bronze metals. Use one trim color to the greatest extend possible.
- *New Work:* Do not paint new masonry.
- *Color Use:* Usually two colors on a building produce the best appearance - one wall color and one trim color. Do not use more than three colors - one wall color, one metal color and one accent color such as exposed aggregate fascia, columns, beams, etc.

3g. Utility and Dumpster Enclosures

Provide an enclosed yard to conceal miscellaneous support items such as generators, transformers, trash, lawn equipment, flammable storage, HVAC, meters, and aboveground tanks.

- *Enclosures:* Match enclosing walls to the building wall material. When this is not possible, metal slats and planting may be used. In some cases, plant material by itself may be used to conceal the service area, but it must functionally conceal at the time of planting. All enclosures need to be at least six feet tall. If the items being concealed are taller than six feet then the enclosure should be as tall as the tallest item in the enclosures.
- *Gates:* Provide gates for trash enclosures.
- *Subdivide:* Organize and layout the service yard by responsibility. For instance, HVAC equipment should not be in the trash enclosure. Many of the functions may require separation and separate access such as tools, lawn mowers, fuel, etc.
- *Pavement:* Provide vehicular access and surfacing such as pavement or gravel to reduce maintenance. Use concrete curbs or edging.

4. Interior Design Policy

Air Combat Command standards differentiate based on whether a finish will be permanent or non-permanent. The differentiation is necessary due to the color palette changes each year. Generally permanent finishes last longer and consequently need to be a color that will not become dated after a few years. Non-permanent finishes do not last as long and can be updated to the new colors as they change.

4a. Permanent Finishes

Command Standards require that all permanent finishes be in either brown-tone or gray-tone neutrals. These neutral shades can

be from very light (such as off-white relating to the particular color tone) to a mid-range neutral of this same shade.

- *Special Note:* Neutrals can be tricky! It is important to choose true neutrals. A true neutral is one that can work in combination with almost any other color in the spectrum. A brown-tone neutral with a pink or yellow base will not work this way nor will a gray-tone neutral with a blue or green base.

4b. Non-Permanent Finishes

Command Standards allow non-permanent finishes to be any coloration appropriate to the facility. Most often these finishes will be in mid-range colorations. Very seldom would there be a use for pastel or very bright colors in our facilities. However, primary colors of red, yellow, blue and green may be used in youth centers, child care centers or bowling centers!

While non-permanent finishes are allowed in various colors, it is highly recommended that in office and other work areas, the vinyl wall covering or painted wall surfaces also be kept in a neutral coloration. Light reflective surfaces are important to a productive work environment. Dark colors absorb light. In other words, for work areas, develop a neutral shell for the interior space with only the carpet, upholstery, and artwork providing the color accent. This is the way most large corporations develop their interior plans. Remember, all the people who occupy these spaces bring color into them each day.

4c. Finishes and Treatments

- *Vinyl wall covering:* Should be Type II in most applications. Type I has very limited use in most of our facilities. A vertical texture will help hide seaming.
- *Paint:* Use a low sheen enamel for all painted surfaces. Flat paint is impossible to maintain in our facilities.
- *Laminates:* Laminate surfaces are much more maintainable if the laminate has a flecked, speckled, mottled, texture or granite-look. Soiling and water spotting is not nearly so visible on these surfaces.
- *Ceilings:* In almost all facilities, ceilings (whether painted or ceiling tile), are to be off-white to coordinate with the color tone of the walls. Textured ceiling tiles in two foot squares with a regular edge are recommended.
- *Wainscot and Chair Rail:* Wainscot is not recommended in most areas. Dark paneling wainscot has the effect of visually reducing the size of small office spaces. In long hallways wood panel wainscot has a railroading effect. A Type II heavy duty vinyl wallcovering will have a better effect. If paneling is required, cover one accent wall floor to ceiling. The purpose of chair rail is to protect wall surfaces from being marred by chair

backs. Therefore, the chair back height must be considered to properly located the chair rail. It may be stained or painted to coordinate with the other woodwork or doors. Wainscot and chair rail should be no more than 36" high in rooms and no more that 42" high in corridors. Heavy vinyl bumper guards may also be used to protect walls in corridors where needed. They, too, should be in coordinating neutrals.

- *Vinyl/Rubber Base and Carpet Base:* Use vinyl/rubber base in areas where the floor surface is vinyl composition tile (VCT) or rubber tile. Base is to be in a coordinating neutral to the floor surface, as near the same shade as possible. Do not use a dark color or accent color for the base. Use a four inch carpet base capped with a dark neutral vinyl/rubber carpet cap in carpeted areas. Use the same carpet for the base as meets the wall in the case of borders. When carpet tile is used it will be necessary to use a vinyl/rubber base. Choose a neutral that will most closely relate to the carpet coloration or wall coloration. With carpet tile, a straight base must be used (one without a cove foot) and installed first with the carpet tile butted up to it. In ceramic tile areas, if a base is used it will be a coordinating ceramic tile base.
- *Ceramic Tile:* Use a mottled, flecked or specked floor tile, if at all possible. Also, be sure to use a dark tone grout which coordinates with the floor tile to avoid a stained or soiled appearance. Tile banding accents or patterns are approved for walls and floors provided the accent is another neutral shade which coordinates with the dominant tile color.
- *Doors and Door Frames:* Depending on the quality of the doors, they may be either stained or painted. If painted, they may be painted either a color close to the wall color or an accent color of mid-range hue. Hollow metal door frames are best painted a color close to the wall color or only a shade or two darker.
- *Window Blinds:* Metal or vinyl blinds may be horizontal or vertical and are best in off-white or light neutrals. Dust is not as visible on the light colors as on the dark colors, and vertical blinds collect less dust than horizontal ones. Dark blinds that match the anodized finish of the window frames are acceptable, provided the windows are of reflective glass. If the windows are not of reflective glass, dark blinds will radiate a great deal of heat into the building rather than reflecting it as light or off-white blinds do.
- *Carpet:* (See ETL 94-3: Air Force Carpet Standard and revised ACC Carpet Guidance - dated 12 Oct 1993). In general, use mainly bold tweed, nylon, level-loop carpet of a least 28 oz. face weight. Bold tweed means yarns of several different colors, not various shades of the

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same color. Level-loop is the most hard-wearing type of carpet, and bold tweed allows for several upholstery color co-ordinations in a facility using only one carpet color-way. Again, use a 4" carpet base capped with a vinyl/rubber, dark neutral carpet cap.

- *Dormitory Carpet:* Carpet dormitories by using one carpet pattern per building with a different color-way per floor. Take care to ensure that carpet used in living areas is not the same carpet used in the work areas on base. Do not use drab, dull colors in living areas. Bedspreads and chair upholstery can be coordinated per floor to the carpet color-way. Draperies in these small living areas are best kept in neutral colorations to blend in with the walls. This provides a neutral background for personal items of the occupants.
- *Carpet Borders:* Carpet borders may be solid in color. They may be used with either carpet tile or roll goods. Be careful not to over-do borders. In corridors, a border width of 9" is about right. Install field carpet in rectangular shapes and allow border to fill in indentation such as doorways, drinking fountains, etc. Do not use borders in rooms where the furniture will cover the border.
- *Systems/Prewired Workstations/Modular Furniture:* All panel fabrics, work surfaces, flipper doors, etc., are to be in either brown-tone or gray-tone neutrals. Only one type of systems furniture should be used per building in order to allow greater flexibility in reconfiguration as occupants, needs and requirements change and to provide continuity throughout the space. Systems furniture should be installed over carpet tiles. Removal and installation of new carpet in 12 foot widths becomes a major undertaking. A professional team must be hired to dismantle, store, then re-install the systems furniture. This is not efficient or cost effective. Carpet tile will allow for self-help replacement and ease of maneuvering under the systems furniture. Carpet tile will also accommodate flat-wiring for electrical and communications under the carpet.

5. Landscape Design Policy

All landscape planting should comply with the base land management plan. Develop functional rather than purely visual landscapes and preplan to reduce maintenance. Provide a landscaped space uncluttered by vehicles in front, at the entrance, and between the main viewing street and the building.

- *Mowing strips:* Provide planting beds with wide mowing strips such as 4-inch thick by 12-inch wide concrete; mowing strips should eliminate hand trimming and edging caused by turf creeping into bedding plants.
- *Plant Material:* Use indigenous, low maintenance, adapted trees and shrubs

locally recommended for urban or street use that can survive without irrigation after the first season (one year) warranty maintenance period. Do not use plant material that drops large amounts of fruit or seed pods. Select deciduous trees that drop all their leaves early in the fall season rather than those that retain brown leaves most of the winter and continue to be a maintenance problem for many months; some trees to avoid are Sycamore, Beech, and some Oaks.

- *Surface Runoff:* Use trees, shrubs, grass and landscaping to reduce stormwater runoff. Terrace steep slopes.
- *Berms:* Use berms to screen and restrict views. Limit berm slope to one foot in 10 feet. Do not use earth berms against building walls.
- *Function:* Use landscape to reduce energy cost: shade to prevent heat and glare, and wind breaks to lessen air infiltration. Use landscape to screen unsightly views, control pedestrian circulation and define entries.

6. Sign Design Policy

Provide signs that comply with base architectural compatibility. Comply with sign standards provided in ACCR 88-1, Exterior Signs.

- *Moving Signs:* Do not use moving or revolving signs.
- *Monument:* Use of pole mounted or AAFES concession monument signs is a local base decision that has to consider suitability in terms of base architectural compatibility issues. Base personnel should decide this issue.
- *Lettering Size:* For signs other than those covered by ACCR 88-1, size lettering according to the functional viewing distance. Keep sign size to a minimum. The rule to follow for readability is one inch of letter height for each 25 feet of view distance. Example: If a sign is intended to be read from a passing car using a road 100 feet away, the largest sign lettering would be four inches (100 divided by 25 equal 4). Do not oversize.

AAFES/DeCA/Commercial Signs

- Logo and lettering supplied by AAFES/DeCA/or the parent organization are required to be light to dark bronze. It must also be in compliance with the standards that follow.
- Format shall be the AAFES logo followed by the facility name; i.e., AAFES BASE EXCHANGE. This format shall be used for all AAFES facilities including shoppettes, laundry and dry cleaners, military clothing sales, class six stores.
- Logo and facility name shall be the same height and positioned on one continuous horizontal line wherever possible.

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- Facility name shall be spelled out completely with individual letters.
- Logo and letters shall be mounted directly to the building fascia or exterior wall adjacent to the facility's main entrance. The back edge of logo and letters shall be ¼ inch from the face of the wall or fascia.
- Logo and letters shall be light or dark bronze anodized aluminum or other noncorrosive material in a light or dark bronze color. Select finish color for maximum contrast and readability.
- Logo and letters shall be available in even height increments from 2 inches to 16 inches. Choose the appropriate size and color for each facility and location.
- The ratio of height to depth of logo and letters shall be approximately 8 to 1.

Lighted Signs

Internally lighted signs create a commercial impression that is not compatible with ACC goals. When night visibility is functionally required, use external flood or spot lights that illuminate both the sign and adjacent landscape or building. Illumination of the sign with its surroundings makes a better impression and improves orientation.

Lettering

All lettering on all base signs should be of the same style. Upper case Helvetica medium type style is recommended.

6a. Exterior Graphics, Striping and Banding

- *Super Graphics:* Painted stripes and letters may be used to rehabilitate large, plain, existing buildings. Design graphics to function: define entrances, identify building numbers, conceal clutter. Proportion graphics to the building size; do not exceed three feet in height of letters or banding for the largest buildings.
- *Use:* Use graphics to relate buildings to each other instead of making a building prominent.
- *Limits:* Graphics are not required on every building. Too much graphic work reduces a building to a billboard. Except for painted masonry and metal buildings, identification signage should be located in adjacent landscaped space at eye level rather than being attached to walls or fascia. This will provide a better impression of the total base. A building's order of importance should be established by factors such as quality of architecture and landscape, not size and location of signage.
- *New Buildings:* Do not use high-color-contrasting bands and strips on new buildings. Use masonry detailing, or texture changes to provide interest. This does not apply to exposed aggregate panels when used as a fascia.

- *Structural Elements:* Do not paint structural columns and beams. This approach generally creates clutter. Instead, design a banding scheme that relates the building to other buildings on the base.